TAREA 11 PRUEBA DE HABILIDADES PRACTICAS PLATAFORMA CISCO

PRESENTADO POR:

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COLOMBIA

TABLA DE CONTENIDO

1. RESUMEN

Se busca que el estudiante ponga en práctica lo aprendido en el diplomado para los escenarios para las sucursales de las 3 sucursales Bogotá, Medellín y Cali, los cuales se deben configurar los dispositivos de redes conectados entre si, configurándolo con los protocolos dados en el transcurso de este diplomado. Se contestan los Reuter de Bogotá como principal con los parámetros Vlan y controlar los datos que entre cada sucursal, dando las restricciones en cada dispositivo de red para en mejor control de conectividad.

2. ABSTRACT

In this final work we discuss the topics studied in the course of all Cisco modules, configure a network and configure as administrator each of the devices with IP addressing, this in order for the student to complement their knowledge.

3. INTRODUCCION

En este trabajo final trataremos los temas estudiados en el transcurso de todos los módulos de cisco, configuraremos una red y configurar como administrador a cada uno de los dispositivos con el direccionamiento IP, esto con el fin de que el estudiante complemente sus conocimientos, configurando predeterminada para servidores, configuración de router con autenticaciones para entrada y salida de información, este proceso se realizara en el software Packet Tracer donde se pondrá en práctica toco lo descrito anteriormente.

4. OBJETIVOS

- Demostrar los conocimientos adquiridos durante el curso desarrollando todos módulos.

- Describir los métodos utilizados para la configuración que se proponen para la creación de la seguridad de los dispositivos de la red.
- Cumplir con las configuraciones recomendadas para cada dispositivo.

- Mantener todos y normas en la creación del informe.

- Entregar informe con lo requerido en la guía.

5. DESARROLLO DE LA PRÁCTICA

ESCENARIO 1

Una empresa posee sucursales distribuidas en las ciudades de Bogotá, Medellín y Cali en donde el estudiante será el administrador de la red, el cual deberá configurar e interconectar entre sí cada uno de los dispositivos que forman parte del escenario, acorde con los lineamientos establecidos para el direccionamiento IP, protocolos de enrutamiento y demás aspectos que forman parte de la topología de red.

Como trabajo inicial se debe realizar lo siguiente.

•Realizar las rutinas de diagnóstico y dejar los equipos listos para su configuración (asignar nombres de equipos, asignar claves de seguridad, etc).

BOGOTA

Router(config)#hostname Bogota
Bogota(config)#
Bogota(config)#line console 0
Bogota(config-line)#password 12345
Bogota(config-line)#login

Bogota>en
Bogota#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Bogota(config)#line vty 0 4
Bogota(config-line)#password 12345
Bogota(config-line)#login
Bogota(config-line)#loggin synchronous
Bogota(config-line)#exit
Bogota(config)#

MEDELLIN

Router>enable
Router#configure terminal
Router(config)#hostname Medellin
Medellin(config)#
Medellin(config)#LINE CONSOLE 0
Medellin(config-line)#password 12345
Medellin(config-line)#login
Medellin(config-line)#

Medellin>en
Medellin#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Medellin(config)#line vty 0 4
Medellin(config-line)#password 12345
Medellin(config-line)#loggin synchronous
Medellin(config-line)#exit
Medellin(config)#

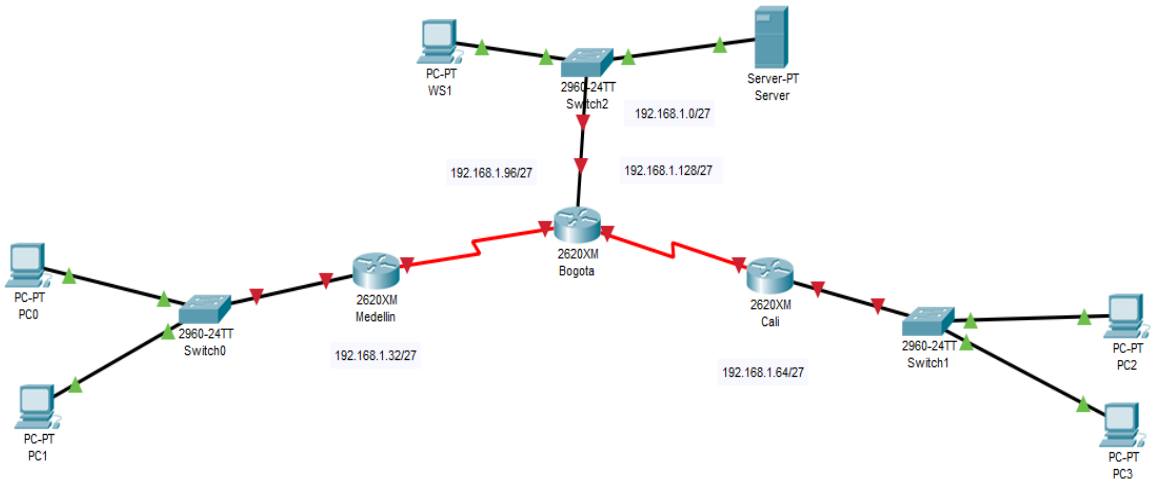
CALI

Router>
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname Cali
Cali(config)#
Cali(config)#line console 0
Cali(config-line)#password 12345
Cali(config-line)#login
Cali(config-line)#

Cali>en
Cali#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Cali(config)#line vty 0 4
Cali(config-line)#password 12345
Cali(config-line)#loggin synchronous
Cali(config-line)#exit
Cali(config)#

•Realizar la conexión física de los equipos con base en la topología de red

Configurar la topología de red, de acuerdo con las siguientes especificaciones.



6.TOPOLOGIA

3 routers 2620mx
3 switchs 2960-24tt
1 servidor
5 computadores

7. Parte 1: Asignación de direcciones IP:

a.Se debe dividir (subnetear) la red creando una segmentación en ocho partes, para permitir crecimiento futuro de la red corporativa.
b.Asignar una dirección IP a la red.

La direccion que se le da a la red es la siguiente: 192.168.1.0/24

Se divide en 8 partes y cada parte en la red/27 con la máscara de sub red perteneciente a /27, que es 255.255.255.224: y se asignan las direcciones IP en el siguiente paso.

192.168.1.0/27
192.168.1.32/27
192.168.1.64/27
192.168.1.96/27
192.168.1.128/27
192.168.1.160/27
192.168.1.192/27
192.168.1.224/27

8. Parte 2: Configuración Básica.

a. Completar la siguiente tabla con la configuración básica de los routers, teniendo en cuenta las subredes diseñadas.

	R 1	R 2	R 3
Nombre de Host	**MEDELLIN**	**BOGOTA**	**CALI**
Dirección de Ip en interfaz Serial 0/0	192.168.1.99	192.168.1.98	192.168.1.131
Dirección de Ip en interfaz Serial 0/1		192.168.1.130	
Dirección de Ip en interfaz FA 0/0	192.168.1.33	192.168.1.1	192.168.1.65
Protocolo de enrutamiento	**Eigrp**	**Eigrp**	**Eigrp**
Sistema Autónomo	200	200	200
Afirmaciones de red	192.168.1.0	192.168.1.0	192.168.1.0

BOGOTA

Bogota>
Bogota>enable
Bogota#
Bogota#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Bogota(config)#interface FastEthernet0/0
Bogota(config-if)#ip address 192.168.1.1 255.255.255.224
Bogota(config-if)#
Bogota(config-if)#exit
Bogota(config)#interface FastEthernet0/0
Bogota(config-if)#
Bogota(config-if)#exit
Bogota(config)#interface FastEthernet0/0
Bogota(config-if)#no shutdown
Bogota(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
Bogota(config-if)#exit
Bogota(config)#interface Serial0/0
Bogota(config-if)#ip address 192.168.1.98 255.255.255.224

Bogota(config-if)#no shutdown
%LINK-5-CHANGED: Interface Serial0/0, changed state to down
Bogota(config-if)#
Bogota(config-if)#exit
Bogota(config)#interface Serial0/0
Bogota(config-if)#
Bogota(config-if)#exit
Bogota(config)#interface Serial0/1
Bogota(config-if)#ip address 192.168.1.130 255.255.255.224
Bogota(config-if)#no shutdown

Bogota#en
Bogota#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Bogota(config)#ip route 192.168.1.64 255.255.255.224 192.168.1.131
Bogota(config)#ip route 192.168.1.32 255.255.255.224 192.168.1.99
Bogota(config)#exit
Bogota#
Bogota#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]

MEDELLIN

Medellin>enable
Medellin#
Medellin#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Medellin(config)#interface FastEthernet0/0
Medellin(config-if)#ip address 192.168.1.33 255.255.255.224
Medellin(config-if)#no shutdown
Medellin(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
Medellin(config-if)#exit

Medellin(config)#
Medellin(config)#interface FastEthernet0/0
Medellin(config-if)#
Medellin(config-if)#exit
Medellin(config)#interface Serial0/0
Medellin(config-if)#ip address 192.168.1.99 255.255.255.224
Medellin(config-if)#no shutdown
Medellin(config-if)#
%LINK-5-CHANGED: Interface Serial0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0, changed state to up
Medellin(config-if)#exit
Medellin(config)#ip route 192.168.1.0 255.255.255.224 192.168.1.97
Medellin(config)#ip route 192.168.1.64 255.255.255.224 192.168.1.97
Medellin(config)#exit
Medellin#
%SYS-5-CONFIG_I: Configured from console by console
Medellin#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
Medellin#

CALI

Cali>enable
Cali#
Cali#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Cali(config)#interface FastEthernet0/0
Cali(config-if)#ip address 192.168.1.65 255.255.255.224
Cali(config-if)#no shutdown
Cali(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
Cali(config-if)#exit
Cali(config)#interface FastEthernet0/0
Cali(config-if)#
Cali(config-if)#exit

Cali(config)#interface Serial0/0
Cali(config-if)#ip address 192.168.1.131 255.255.255.224
Cali(config-if)#no shutdown
Cali(config-if)#
%LINK-5-CHANGED: Interface Serial0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0, changed state to up
Cali(config-if)#exit
Cali(config)#ip route 192.168.1.0 255.255.255.224 192.168.1.129
Cali(config)#ip route 192.168.1.32 255.255.255.224 192.168.1.129
Cali(config)#exit
Cali#
%SYS-5-CONFIG_I: Configured from console by console
Cali#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]

b. Después de cargada la configuración en los dispositivos, verificar la tabla de enrutamiento en cada uno de los routers para comprobar las redes y sus rutas.

BOGOTA

Bogota#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is not set

192.168.1.0/27 is subnetted, 5 subnets
C 192.168.1.0 is directly connected, FastEthernet0/0
S 192.168.1.32 [1/0] via 192.168.1.99
S 192.168.1.64 [1/0] via 192.168.1.131
C 192.168.1.96 is directly connected, Serial0/0
C 192.168.1.128 is directly connected, Serial0/1

MEDELLIN

Medellin>SHOW IP ROUTE
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is not set

192.168.1.0/27 is subnetted, 4 subnets
S 192.168.1.0 [1/0] via 192.168.1.97
C 192.168.1.32 is directly connected, FastEthernet0/0
S 192.168.1.64 [1/0] via 192.168.1.97
C 192.168.1.96 is directly connected, Serial0/0

CALI

Cali>show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is not set

192.168.1.0/27 is subnetted, 4 subnets
S 192.168.1.0 [1/0] via 192.168.1.129
S 192.168.1.32 [1/0] via 192.168.1.129
C 192.168.1.64 is directly connected, FastEthernet0/0
C 192.168.1.128 is directly connected, Serial0/0

c. Verificar el balanceo de carga que presentan los routers.

BOGOTA

Bogota >enable
BOGOTA#show ip eigrp topology
IP-EIGRP Topology Table for AS 1/ID(192.168.1.130)
Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
r - Reply status
P 192.168.1.0/27, 1 successors, FD is 28160
via Connected, FastEthernet0/0
P 192.168.1.32/27, 1 successors, FD is 2172416
via 192.168.1.99 (2172416/28160), Serial0/0
P 192.168.1.64/27, 1 successors, FD is 2172416
via 192.168.1.131 (2172416/28160), Serial0/1
P 192.168.1.96/27, 1 successors, FD is 2169856
via Connected, Serial0/0
P 192.168.1.128/27, 1 successors, FD is 2169856
via Connected, Serial0/1

MEDELLIN

Medellin>enable
Password:
MEDELLIN#show ip eigrp topology
IP-EIGRP Topology Table for AS 1/ID(192.168.1.99)
Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
r - Reply status
P 192.168.1.0/27, 1 successors, FD is 2172416
via 192.168.1.98 (2172416/28160), Serial0/0
P 192.168.1.32/27, 1 successors, FD is 28160
via Connected, FastEthernet0/0
P 192.168.1.64/27, 1 successors, FD is 2684416
via 192.168.1.98 (2684416/2172416), Serial0/0
P 192.168.1.96/27, 1 successors, FD is 2169856
via Connected, Serial0/0
P 192.168.1.128/27, 1 successors, FD is 2681856
via 192.168.1.98 (2681856/2169856), Serial0/0

CALI

Cali>enable
Password:
CALI#show ip eigrp topology
IP-EIGRP Topology Table for AS 1/ID(192.168.1.131)

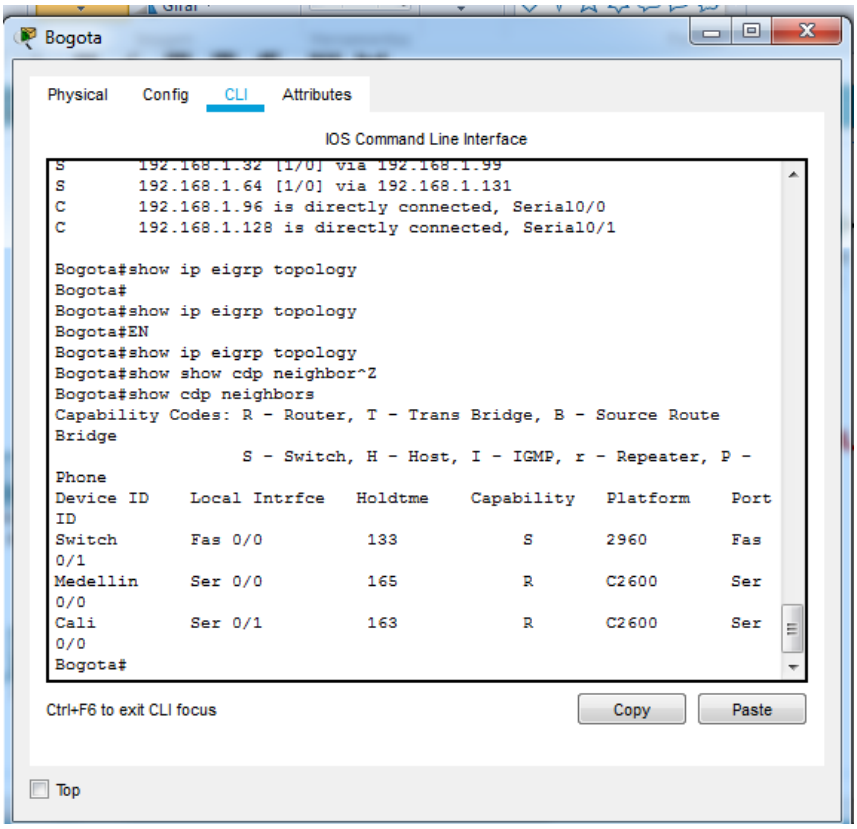
Codes: P - Passive, A - Active, U - Update, Q - Query, R - Reply,
r - Reply status

P 192.168.1.0/27, 1 successors, FD is 2172416
via 192.168.1.130 (2172416/28160), Serial0/0
P 192.168.1.32/27, 1 successors, FD is 2684416
via 192.168.1.130 (2684416/2172416), Serial0/0
P 192.168.1.64/27, 1 successors, FD is 28160
via Connected, FastEthernet0/0
P 192.168.1.96/27, 1 successors, FD is 2681856
via 192.168.1.130 (2681856/2169856), Serial0/0
P 192.168.1.128/27, 1 successors, FD is 2169856
via Connected, Serial0/0

d. Realizar un diagnóstico de vecinos usando el comando cdp.

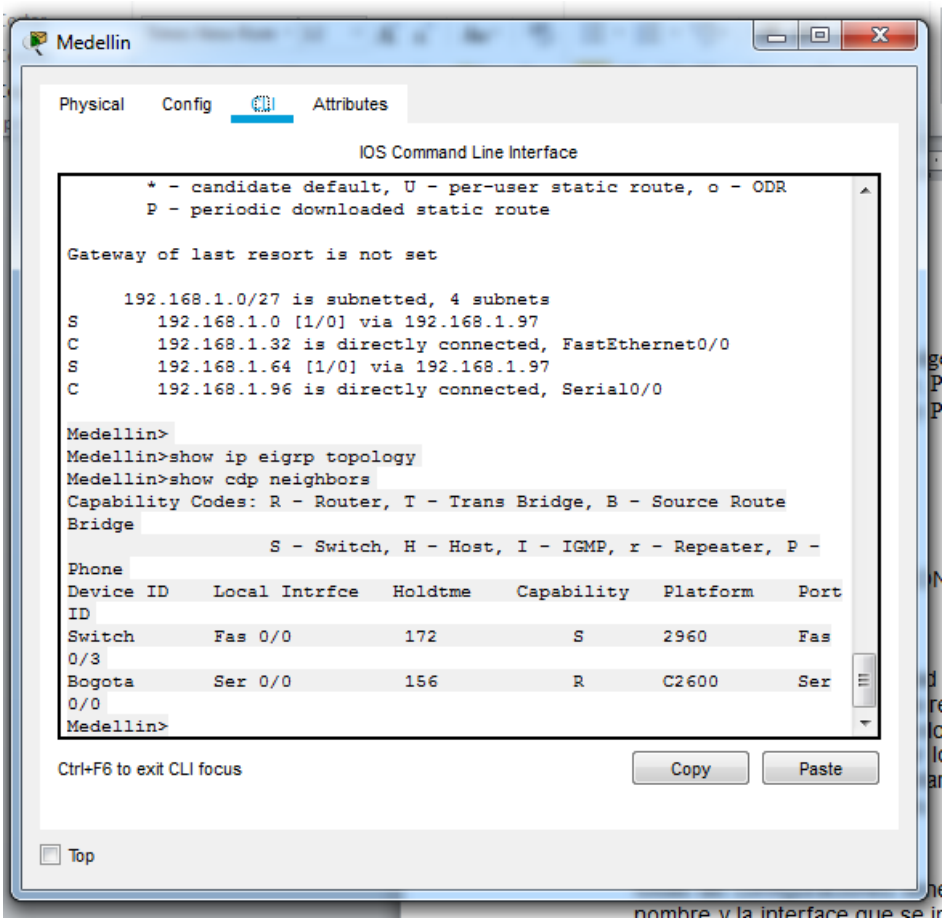
BOGOTA

Bogota#show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone
Device ID Local Intrfce Holdtme Capability Platform Port ID
Switch Fas 0/0 133 S 2960 Fas 0/1
Medellin Ser 0/0 165 R C2600 Ser 0/0
Cali Ser 0/1 163 R C2600 Ser 0/0
Bogota#



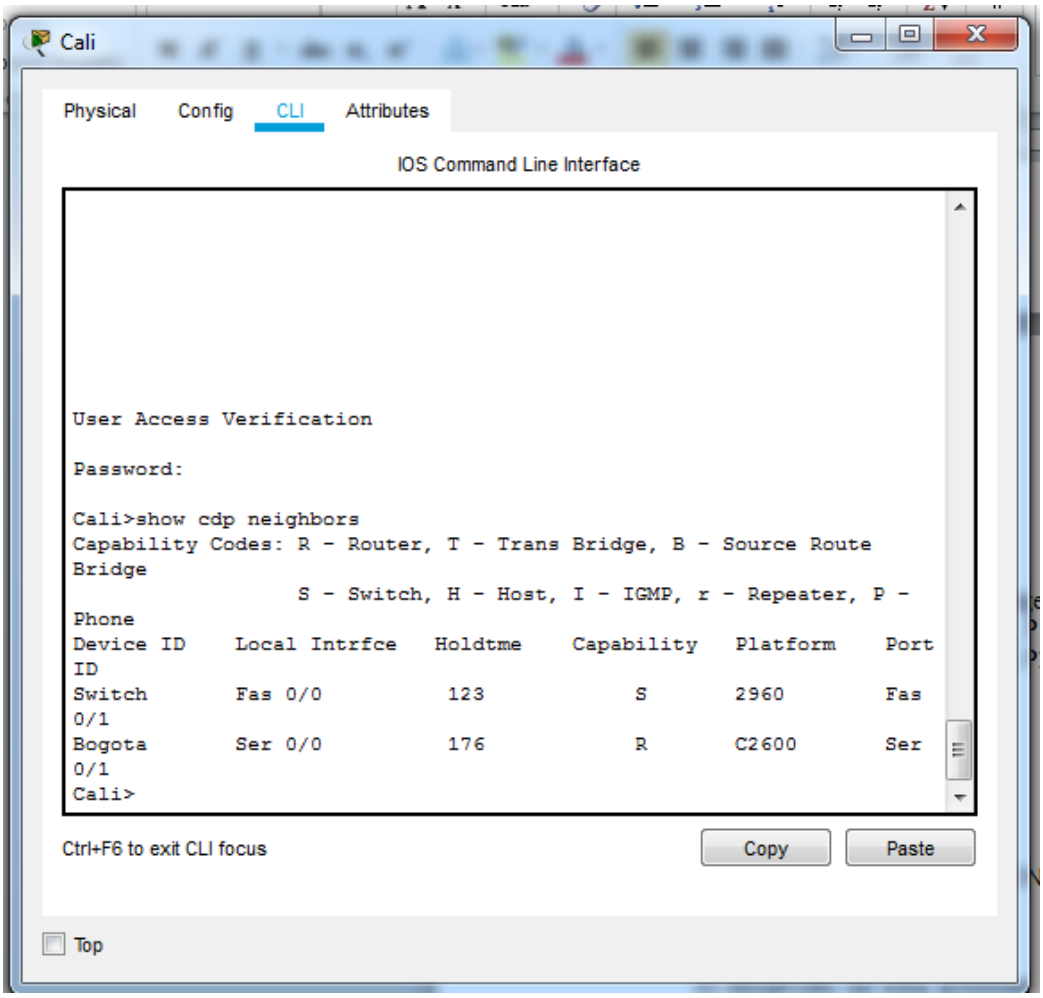
MEDELLIN

Medellin>
Medellin>show ip eigrp topology
Medellin>show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone
Device ID Local Intrfce Holdtme Capability Platform Port ID
Switch Fas 0/0 172 S 2960 Fas 0/3
Bogota Ser 0/0 156 R C2600 Ser 0/0
Medellin>



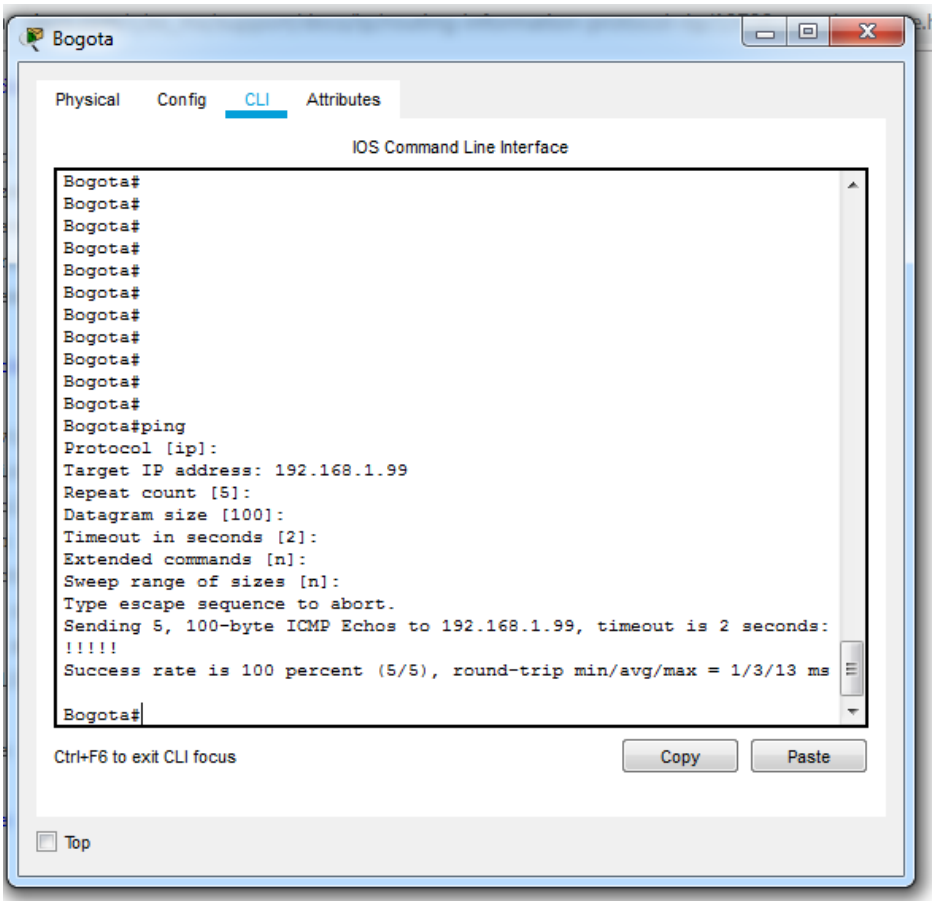
CALI

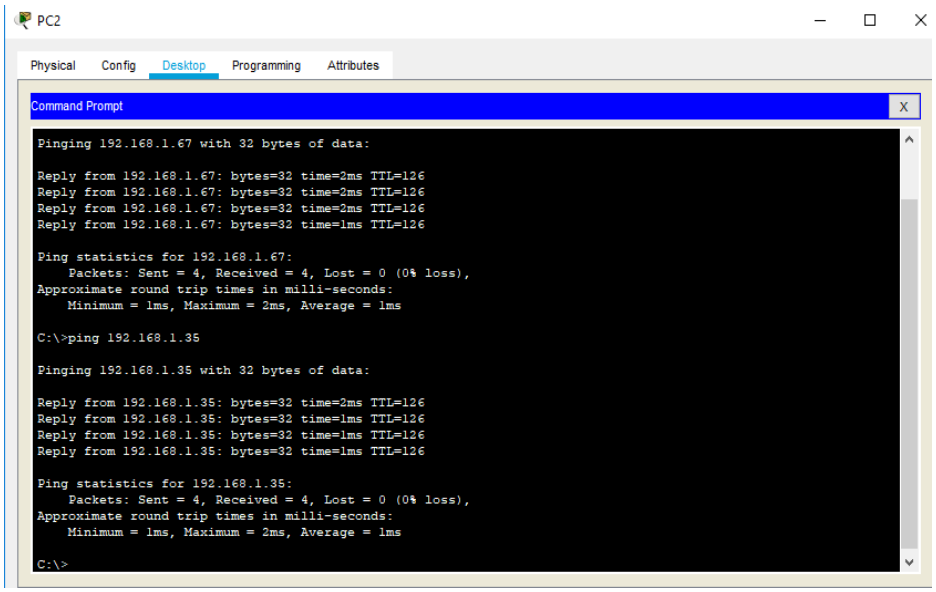
Cali>show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone
Device ID Local Intrfce Holdtme Capability Platform Port ID
Switch Fas 0/0 123 S 2960 Fas 0/1
Bogota Ser 0/0 176 R C2600 Ser 0/1
Cali>


Cali
Physical
Config
CLI
Attributes
IOS Command Line Interface
User Access Verification
Password:
Cali>show cdp neighbors
Capability Codes: R - Router, T - Trans Bridge, B - Source Route Bridge
S - Switch, H - Host, I - IGMP, r - Repeater, P - Phone
Device ID Local Intrfce Holdtme Capability Platform Port ID
Switch Fas 0/0 123 S 2960 Fas 0/1
Bogota Ser 0/0 176 R C2600 Ser 0/1
Cali>
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

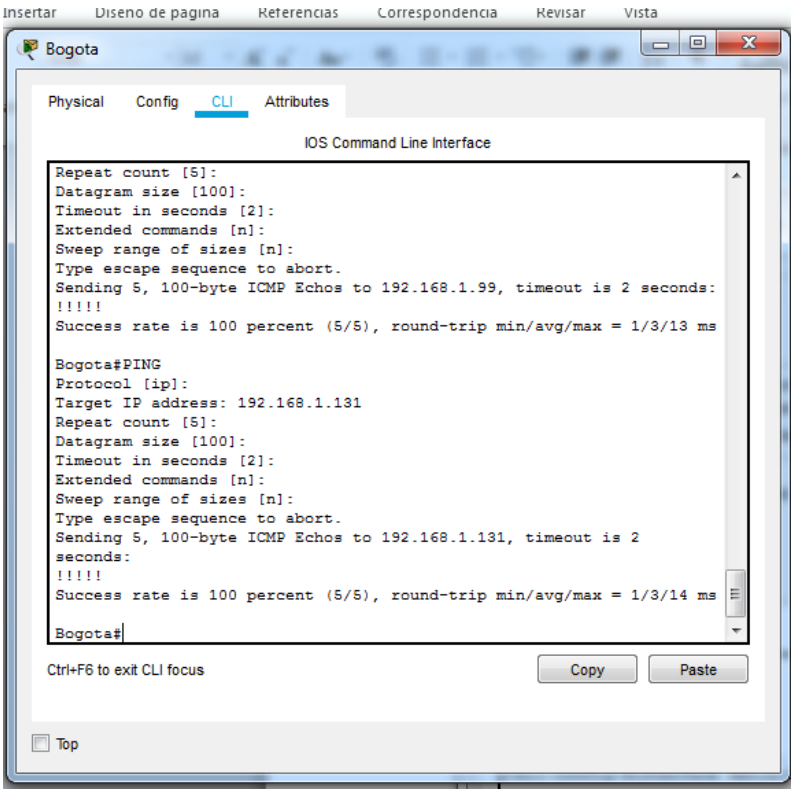
e. Realizar una prueba de conectividad en cada tramo de la ruta usando Ping.

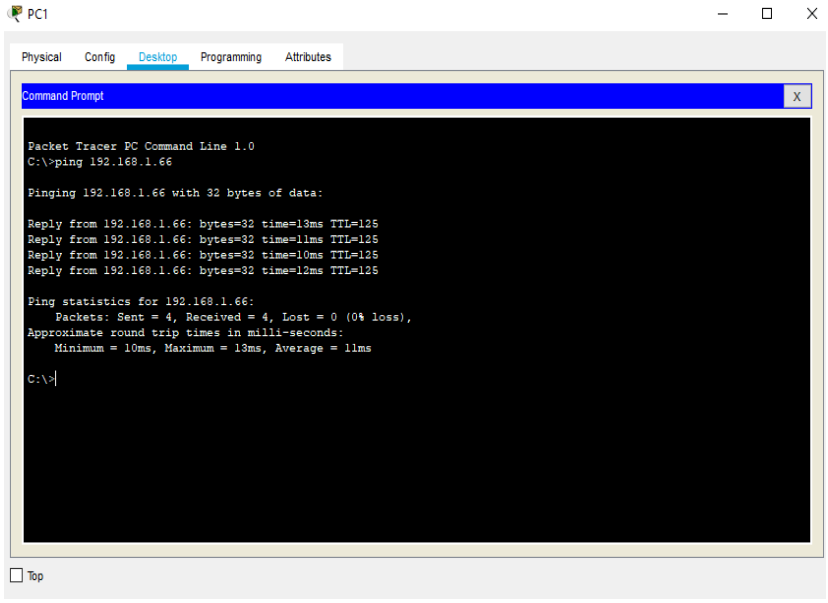
BOGOTA MEDELLIN

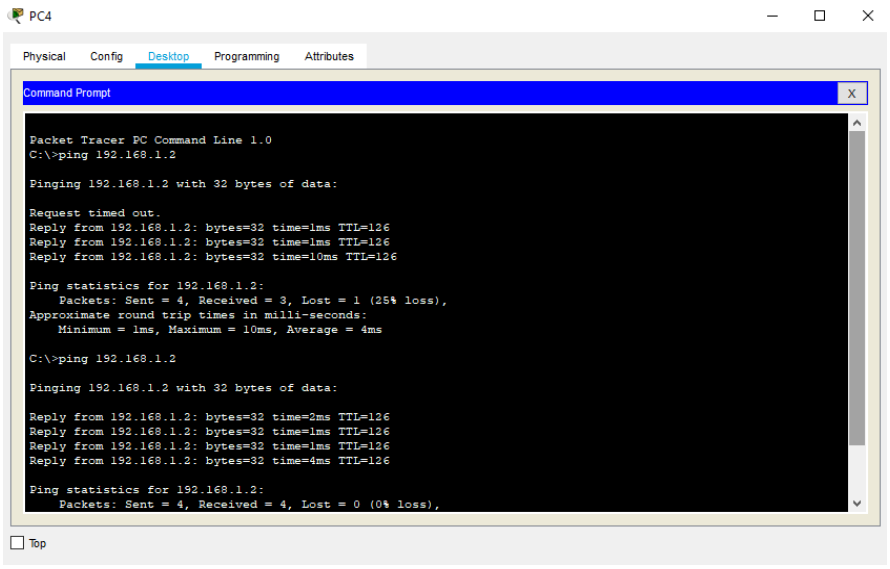


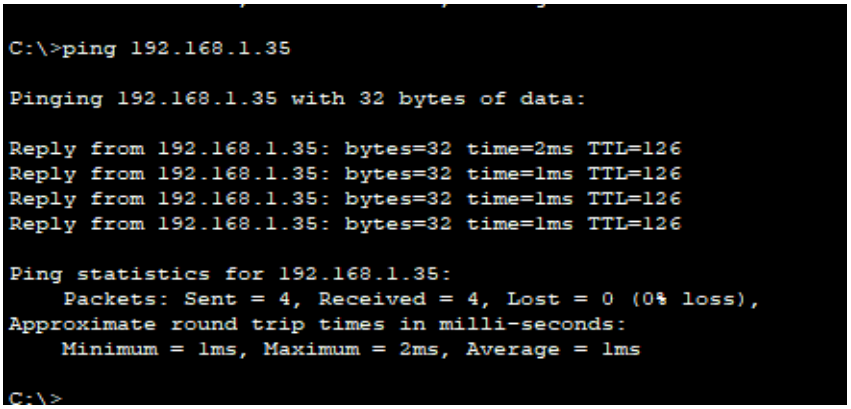


BOGOTA CALI


Insertar Diseño de página Referencias Correspondencia Revisar Vista
Bogota
Physical Config CLI Attributes
IOS Command Line Interface
Repeat count [5]:
Datagram size [100]:
Timeout in seconds [2]:
Extended commands [n]:
Sweep range of sizes [n]:
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.99, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/3/13 ms
Bogota#PING
Protocol [ip]:
Target IP address: 192.168.1.131
Repeat count [5]:
Datagram size [100]:
Timeout in seconds [2]:
Extended commands [n]:
Sweep range of sizes [n]:
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.1.131, timeout is 2
seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/3/14 ms
Bogota#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top


PC1
Physical Config Desktop Programming Attributes
Command Prompt
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.66
Pinging 192.168.1.66 with 32 bytes of data:
Reply from 192.168.1.66: bytes=32 time=13ms TTL=125
Reply from 192.168.1.66: bytes=32 time=11ms TTL=125
Reply from 192.168.1.66: bytes=32 time=10ms TTL=125
Reply from 192.168.1.66: bytes=32 time=12ms TTL=125
Ping statistics for 192.168.1.66:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 10ms, Maximum = 13ms, Average = 11ms
C:\>
Top


PC4
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.2
Pinging 192.168.1.2 with 32 bytes of data:
Request timed out.
Reply from 192.168.1.2: bytes=32 time=1ms TTL=126
Reply from 192.168.1.2: bytes=32 time=1ms TTL=126
Reply from 192.168.1.2: bytes=32 time=10ms TTL=126
Ping statistics for 192.168.1.2:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 10ms, Average = 4ms
C:\>ping 192.168.1.2
Pinging 192.168.1.2 with 32 bytes of data:
Reply from 192.168.1.2: bytes=32 time=2ms TTL=126
Reply from 192.168.1.2: bytes=32 time=1ms TTL=126
Reply from 192.168.1.2: bytes=32 time=1ms TTL=126
Reply from 192.168.1.2: bytes=32 time=4ms TTL=126
Ping statistics for 192.168.1.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Top


C:\>ping 192.168.1.35
Pinging 192.168.1.35 with 32 bytes of data:
Reply from 192.168.1.35: bytes=32 time=2ms TTL=126
Reply from 192.168.1.35: bytes=32 time=1ms TTL=126
Reply from 192.168.1.35: bytes=32 time=1ms TTL=126
Reply from 192.168.1.35: bytes=32 time=1ms TTL=126
Ping statistics for 192.168.1.35:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 2ms, Average = 1ms
C:\>

9. Parte 3: Configuración de Enrutamiento.

a. Asignar el protocolo de enrutamiento EIGRP a los routers considerando el direccionamiento diseñado.

BOGOTA

Bogota#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
Bogota(config)#router eigrp 200
Bogota(config-router)#no auto-summary
Bogota(config-router)#network 192.168.1.96
Bogota(config-router)#network 192.168.1.0
Bogota(config-router)#network 192.168.1.128
Bogota(config-router)#

MEDELLIN

Medellin#
Medellin#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Medellin(config)#interface Serial0/0
Medellin(config-if)#
Medellin(config-if)#EXIT
Medellin(config)#router eigrp 200
Medellin(config-router)#no auto-summary
Medellin(config-router)#network 192.168.1.32
Medellin(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 200: Neighbor 192.168.1.98 (Serial0/0) is up: new adjacency

Medellin(config-router)#network 192.168.1.32
Medellin(config-router)#network 192.168.1.96
Medellin(config-router)#

CALI

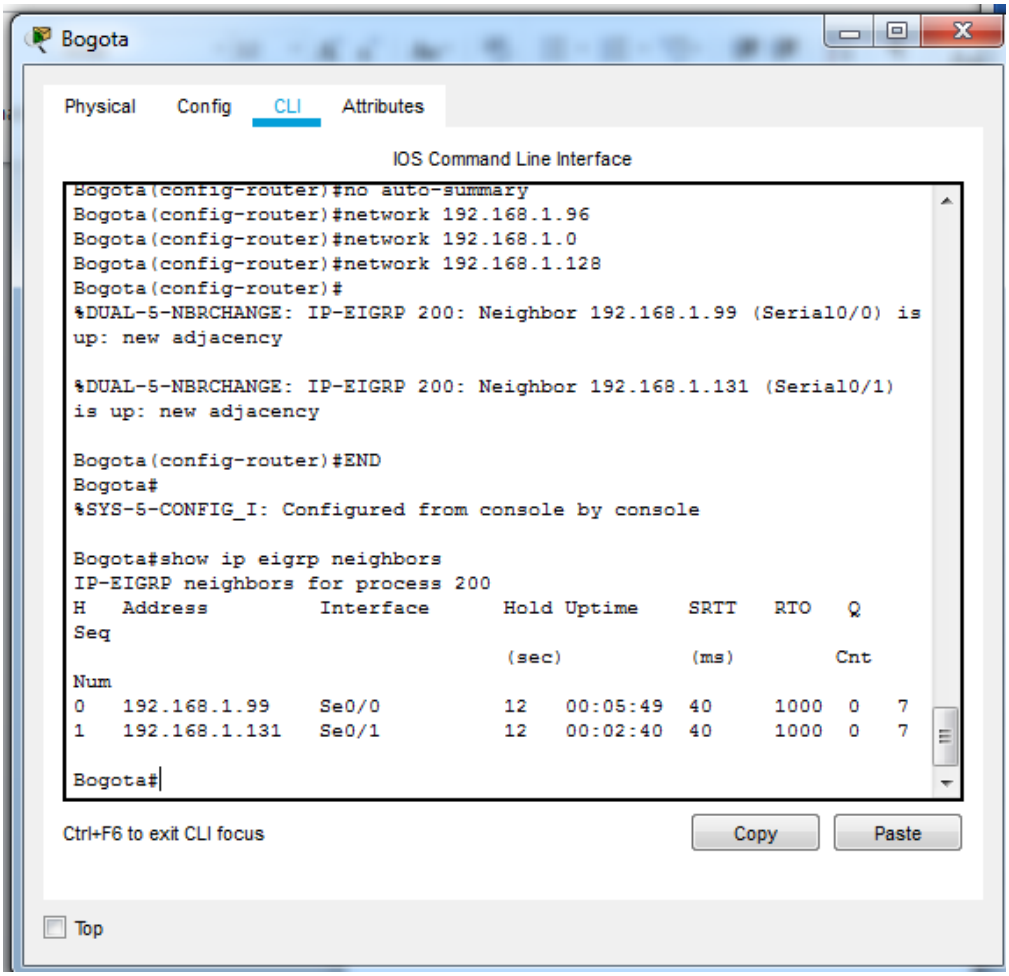
Cali#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
Cali(config)#router eigrp 200
Cali(config-router)#no auto-summary
Cali(config-router)#network 192.168.1.128
Cali(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 200: Neighbor 192.168.1.130 (Serial0/0) is up: new adjacency

Cali(config-router)#network 192.168.1.128

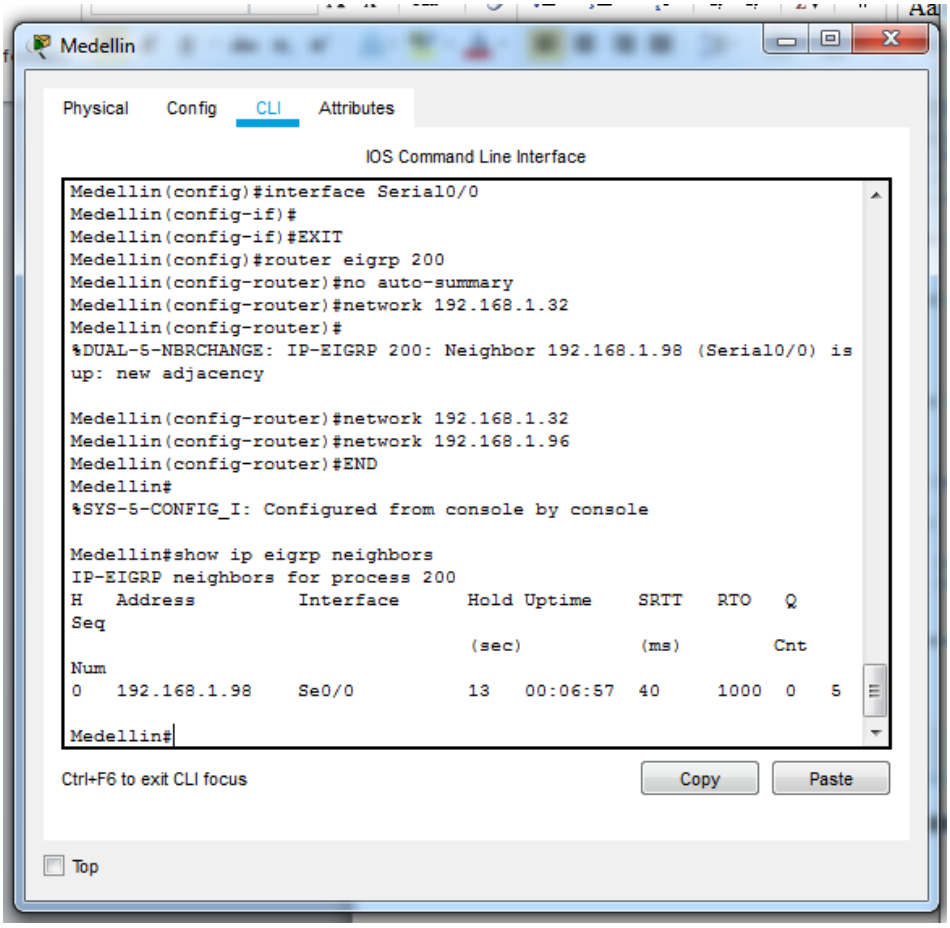
Cali(config-router)#network 192.168.1.64
Cali(config-router)#

b. Verificar si existe vecindad con los routers configurados con EIGRP.

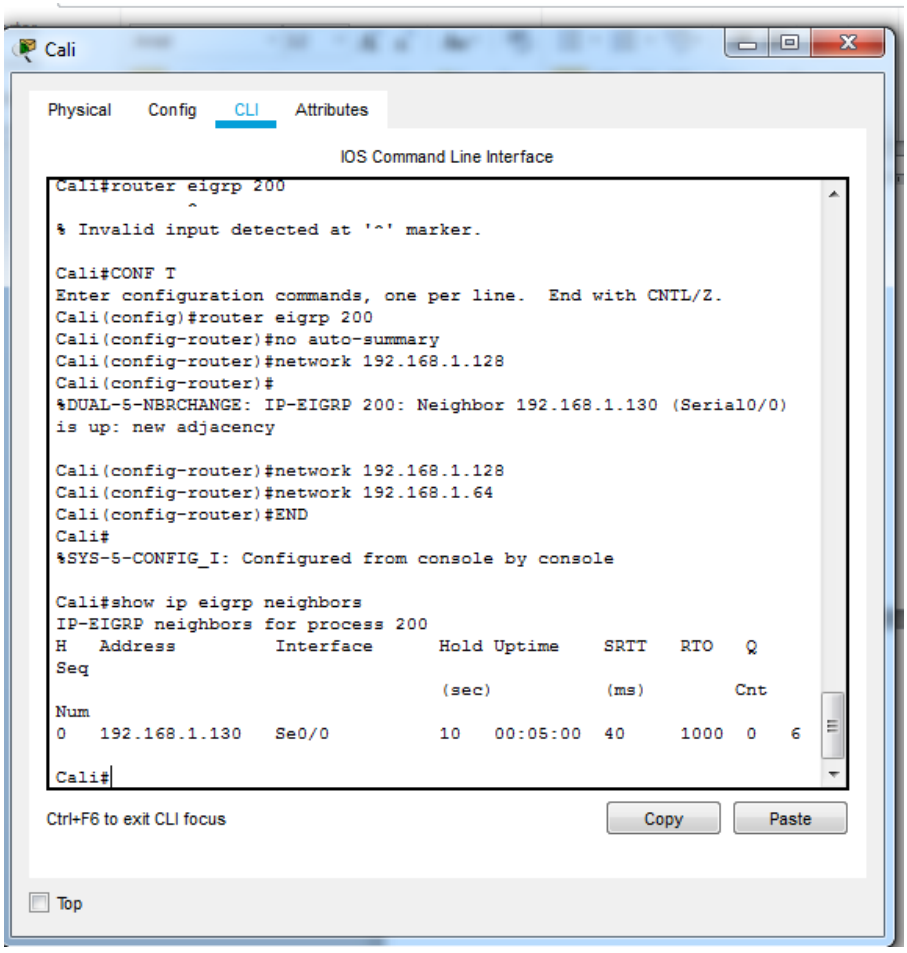
BOGOTA

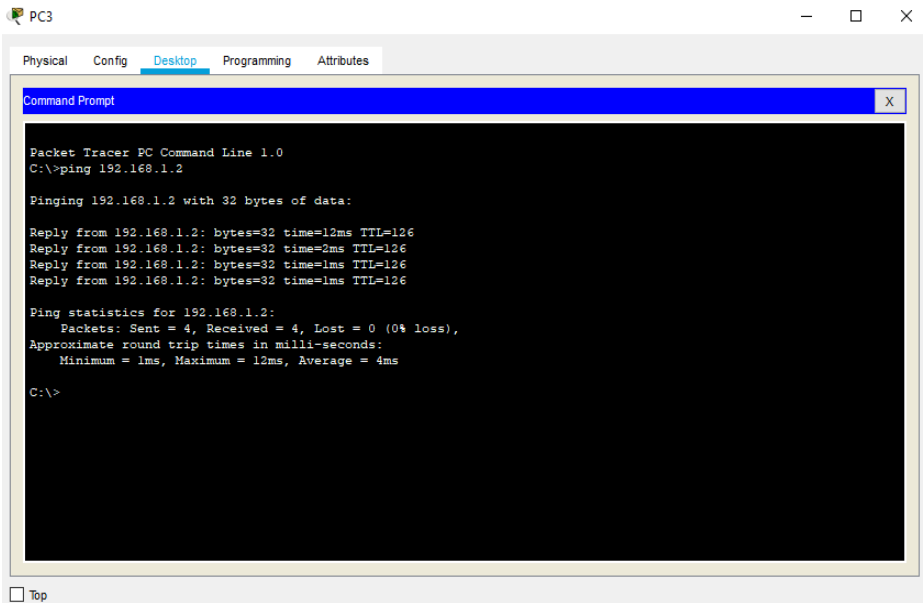


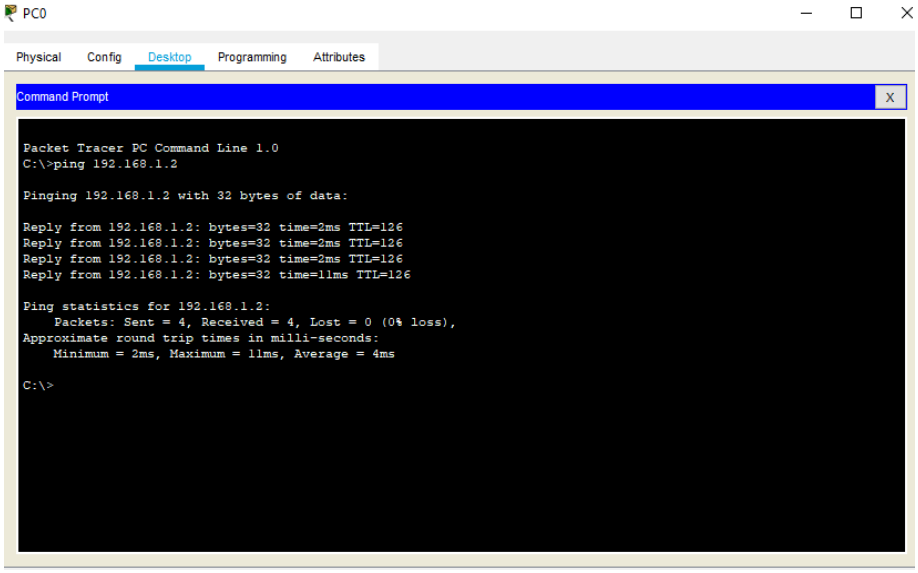
MEDELLIN

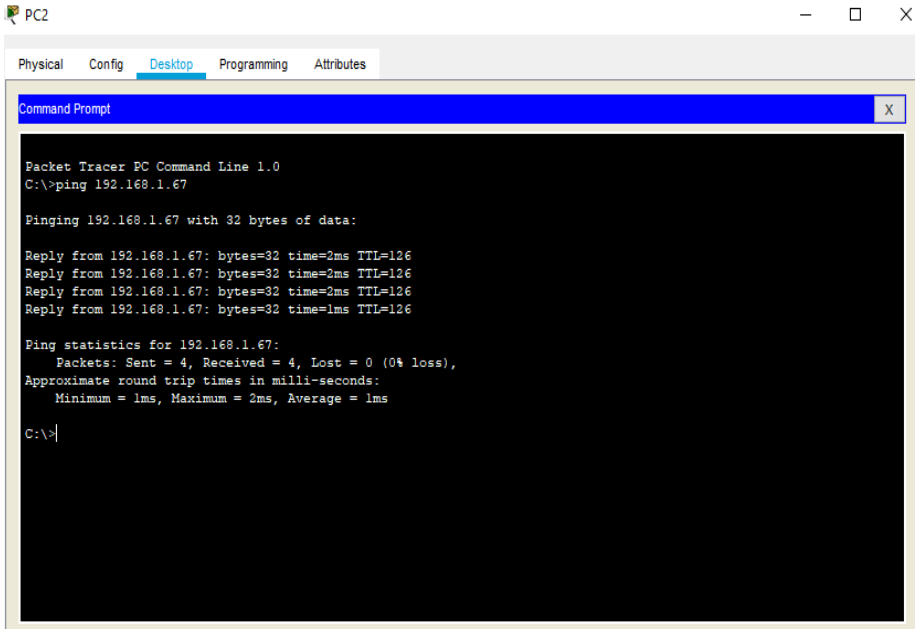

Medellin
Physical
Config
CLI
Attributes
IOS Command Line Interface
Medellin(config)#interface Serial0/0
Medellin(config-if)#
Medellin(config-if)#EXIT
Medellin(config)#router eigrp 200
Medellin(config-router)#no auto-summary
Medellin(config-router)#network 192.168.1.32
Medellin(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 200: Neighbor 192.168.1.98 (Serial0/0) is up: new adjacency
Medellin(config-router)#network 192.168.1.32
Medellin(config-router)#network 192.168.1.96
Medellin(config-router)#END
Medellin#
%SYS-5-CONFIG_I: Configured from console by console
Medellin#show ip eigrp neighbors
IP-EIGRP neighbors for process 200
H Address Interface Hold Uptime SRTT RTO Q Seq
(sec) (ms) Cnt Num
0 192.168.1.98 Se0/0 13 00:06:57 40 1000 0 5
Medellin#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

CALI


Cali
Physical
Config
CLI
Attributes
IOS Command Line Interface
Cali#router eigrp 200
^
% Invalid input detected at '^' marker.
Cali#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
Cali(config)#router eigrp 200
Cali(config-router)#no auto-summary
Cali(config-router)#network 192.168.1.128
Cali(config-router)#
%DUAL-5-NBRCHANGE: IP-EIGRP 200: Neighbor 192.168.1.130 (Serial0/0)
is up: new adjacency
Cali(config-router)#network 192.168.1.128
Cali(config-router)#network 192.168.1.64
Cali(config-router)#END
Cali#
%SYS-5-CONFIG_I: Configured from console by console
Cali#show ip eigrp neighbors
IP-EIGRP neighbors for process 200
H Address Interface Hold Uptime SRTT RTO Q
Seq
(sec) (ms) Cnt
Num
0 192.168.1.130 Se0/0 10 00:05:00 40 1000 0 6
Cali#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

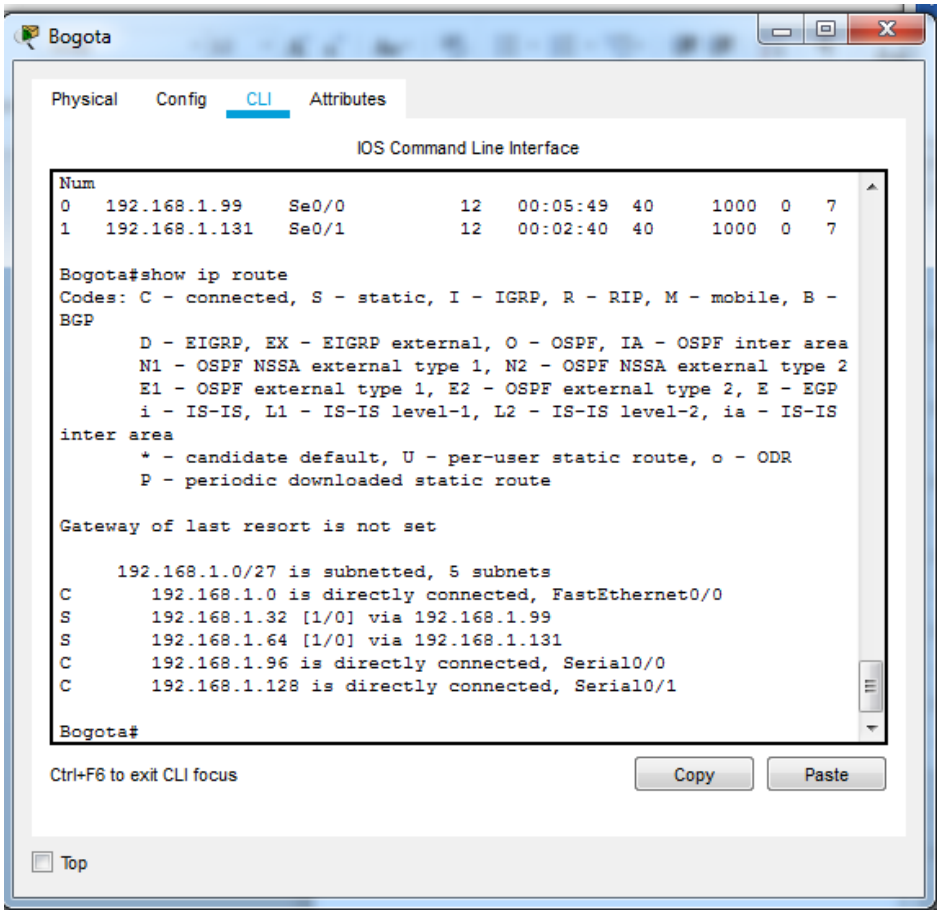

PC3
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.2
Pinging 192.168.1.2 with 32 bytes of data:
Reply from 192.168.1.2: bytes=32 time=12ms TTL=126
Reply from 192.168.1.2: bytes=32 time=2ms TTL=126
Reply from 192.168.1.2: bytes=32 time=1ms TTL=126
Reply from 192.168.1.2: bytes=32 time=1ms TTL=126
Ping statistics for 192.168.1.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 12ms, Average = 4ms
C:\>
Top


PC0
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.2
Pinging 192.168.1.2 with 32 bytes of data:
Reply from 192.168.1.2: bytes=32 time=2ms TTL=126
Reply from 192.168.1.2: bytes=32 time=2ms TTL=126
Reply from 192.168.1.2: bytes=32 time=2ms TTL=126
Reply from 192.168.1.2: bytes=32 time=11ms TTL=126
Ping statistics for 192.168.1.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 11ms, Average = 4ms
C:\>

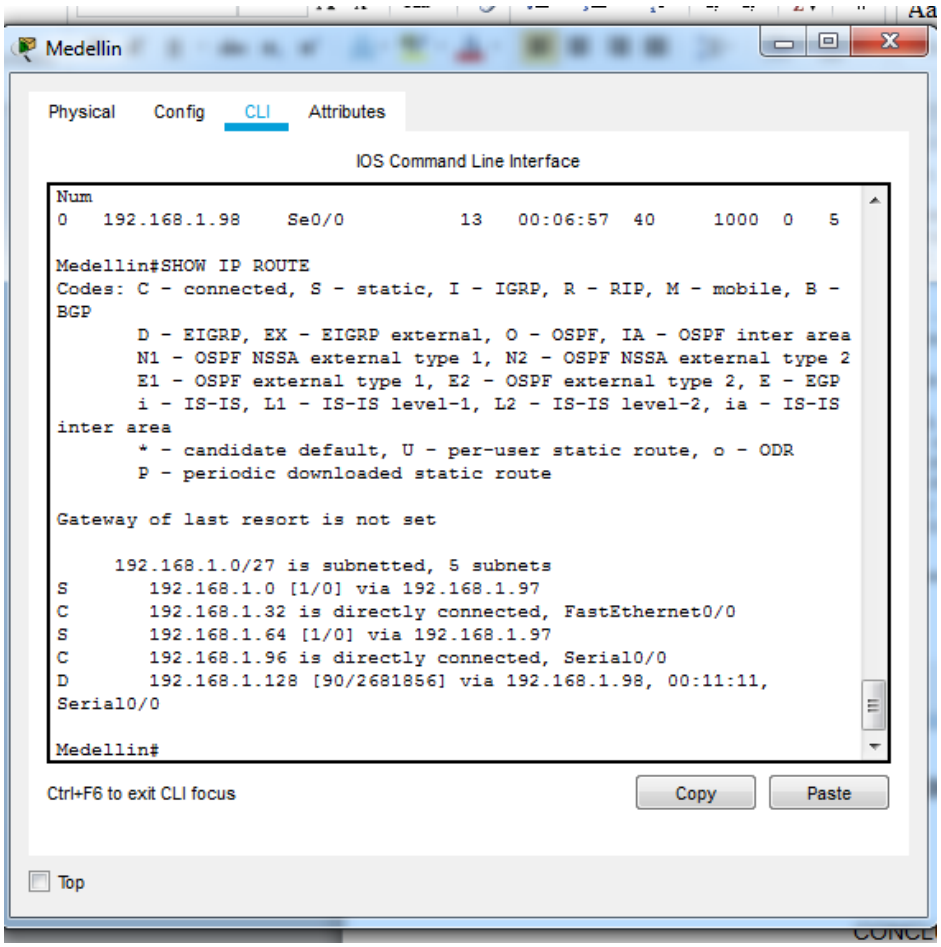

PC2
Physical
Config
Desktop
Programming
Attributes
Command Prompt
X
Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.67
Pinging 192.168.1.67 with 32 bytes of data:
Reply from 192.168.1.67: bytes=32 time=2ms TTL=126
Reply from 192.168.1.67: bytes=32 time=2ms TTL=126
Reply from 192.168.1.67: bytes=32 time=2ms TTL=126
Reply from 192.168.1.67: bytes=32 time=1ms TTL=126
Ping statistics for 192.168.1.67:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 1ms, Maximum = 2ms, Average = 1ms
C:\>

c. Realizar la comprobación de las tablas de enrutamiento en cada uno de los routers para verificar cada una de las rutas establecidas

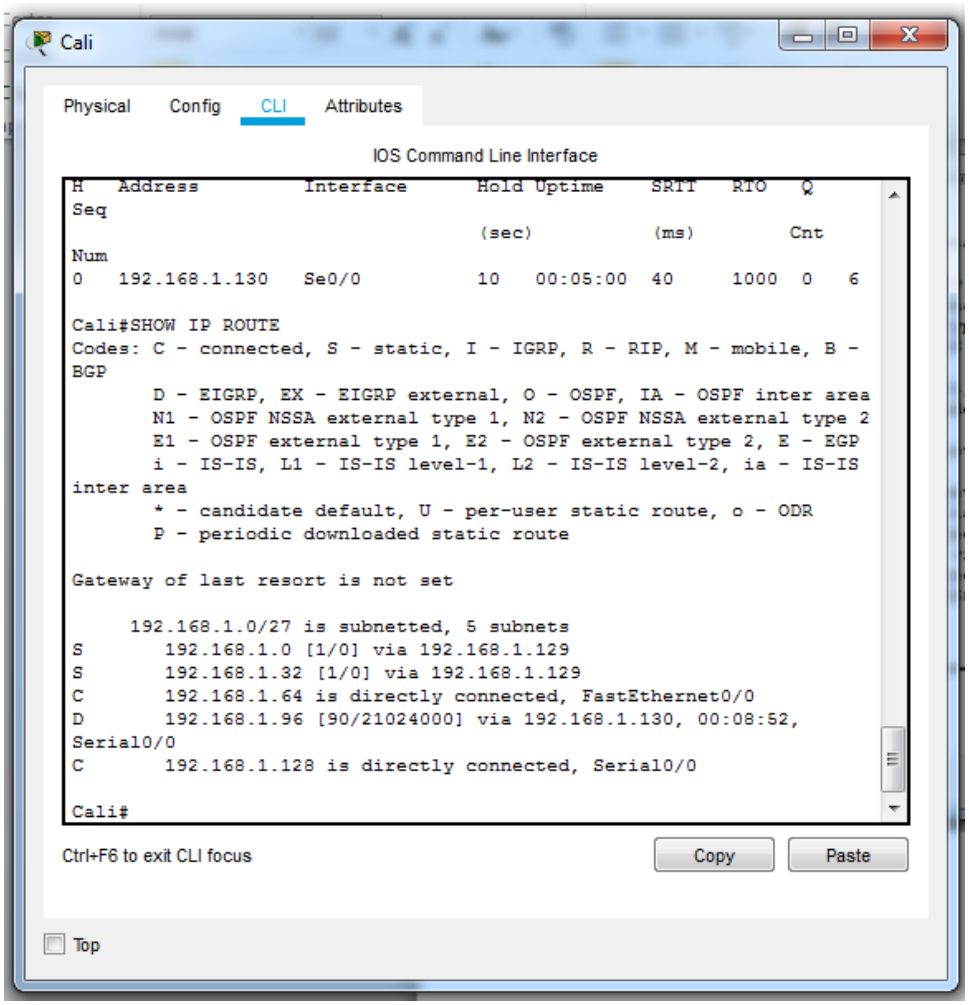
BOGOTA



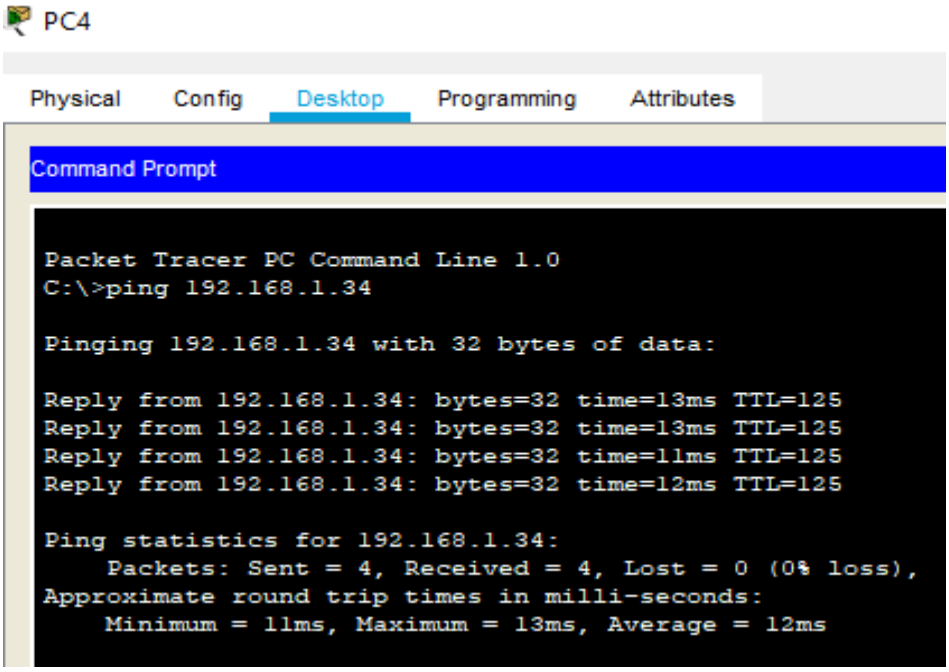
MEDELLIN

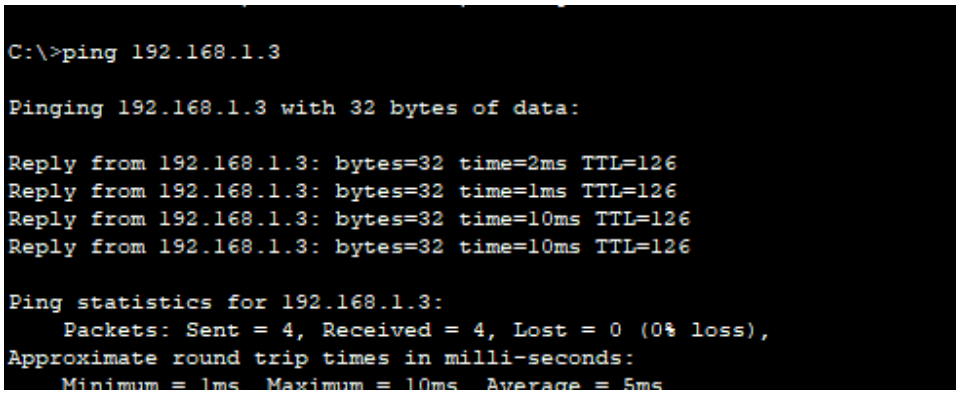

Medellin
Physical
Config
CLI
Attributes
IOS Command Line Interface
Num
0 192.168.1.98 Se0/0 13 00:06:57 40 1000 0 5
Medellin#SHOW IP ROUTE
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route
Gateway of last resort is not set
192.168.1.0/27 is subnetted, 5 subnets
S 192.168.1.0 [1/0] via 192.168.1.97
C 192.168.1.32 is directly connected, FastEthernet0/0
S 192.168.1.64 [1/0] via 192.168.1.97
C 192.168.1.96 is directly connected, Serial0/0
D 192.168.1.128 [90/2681856] via 192.168.1.98, 00:11:11, Serial0/0
Medellin#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

CALI


Cali
Physical
Config
CLI
Attributes
IOS Command Line Interface
H Address Interface Hold Uptime SRTT RTO Q Seq
(sec) (ms) Cnt Num
0 192.168.1.130 Se0/0 10 00:05:00 40 1000 0 6
Cali#SHOW IP ROUTE
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route
Gateway of last resort is not set
192.168.1.0/27 is subnetted, 5 subnets
S 192.168.1.0 [1/0] via 192.168.1.129
S 192.168.1.32 [1/0] via 192.168.1.129
C 192.168.1.64 is directly connected, FastEthernet0/0
D 192.168.1.96 [90/21024000] via 192.168.1.130, 00:08:52, Serial0/0
C 192.168.1.128 is directly connected, Serial0/0
Cali#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

d. Realizar un diagnóstico para comprobar que cada uno de los puntos de la red se puedan ver y tengan conectividad entre sí. Realizar esta prueba desde un host de la red LAN del router CALI, primero a la red de MEDELLIN y luego al servidor





10. Parte 4: Configuración de las listas de Control de Acceso.

En este momento cualquier usuario de la red tiene acceso a todos sus dispositivos y estaciones de trabajo. El jefe de redes le solicita implementar seguridad en la red. Para esta labor se decide configurar listas de control de acceso (ACL) a los routers.
Las condiciones para crear las ACL son las siguientes:

BOGOTA

Bogota>en
Bogota#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Bogota(config)#ip access-list extended ServerPT
Bogota(config-ext-nacl)#permit ip 192.168.1.3 0.0.0.0 0.0.0.0 255.255.255.255
Bogota(config-ext-nacl)#exit
Bogota(config)#
Bogota(config)#interface Serial0/0
Bogota(config-if)#
Bogota(config-if)#exit
Bogota(config)#interface FastEthernet0/0
Bogota(config-if)#ip access-group ServerPT in
Bogota(config)#ip access-list extended ServerPT
Bogota(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.99 0.0.0.0
Bogota(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.1 0.0.0.0
Bogota(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.131 0.0.0.0
Bogota(config-ext-nacl)#END
Bogota#
%SYS-5-CONFIG_I: Configured from console by console

MEDELLIN

Medellin>EN
Medellin#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
Medellin(config)#ip access-list extended ServerPT
Medellin(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.3 0.0.0.0
Medellin(config-ext-nacl)#exit

Medellin(config)#
Medellin(config)#interface Serial0/0
Medellin(config-if)#
Medellin(config-if)#exit
Medellin(config)#interface FastEthernet0/0
Medellin(config-if)#ip access-group ServerPT in
Medellin(config-if)#END
Medellin#
%SYS-5-CONFIG_I: Configured from console by console

Medellin#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
Medellin(config)#ip access-list extended ServerPT
Medellin(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.33 0.0.0.0
Medellin(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.98 0.0.0.0
Medellin(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.131 0.0.0.0
Medellin(config-ext-nacl)#END
Medellin#

%SYS-5-CONFIG_I: Configured from console by console

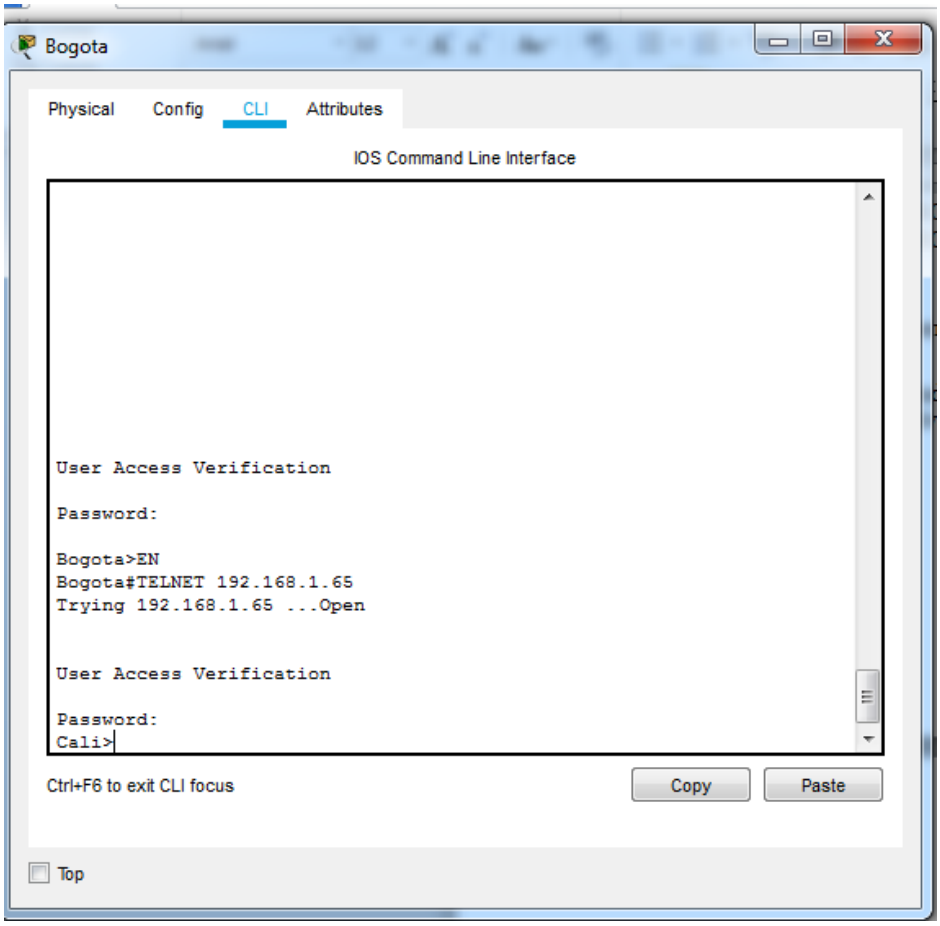
CALI

Cali#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
Cali(config)#ip access-list extended ServerPT
Cali(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.3 0.0.0.0
Cali(config-ext-nacl)#exit
Cali(config)#interface FastEthernet0/0
Cali(config-if)#
Cali(config-if)#exit
Cali(config)#interface FastEthernet0/0
Cali(config-if)#ip access-group ServerPT in
Cali(config-if)#END
Cali#
%SYS-5-CONFIG_I: Configured from console by console
Cali#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
Cali(config)#ip access-list extended ServerPT
Cali(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.99 0.0.0.0
Cali(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.1 0.0.0.0
Cali(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.65 0.0.0.0
Cali(config-ext-nacl)#END
Cali#

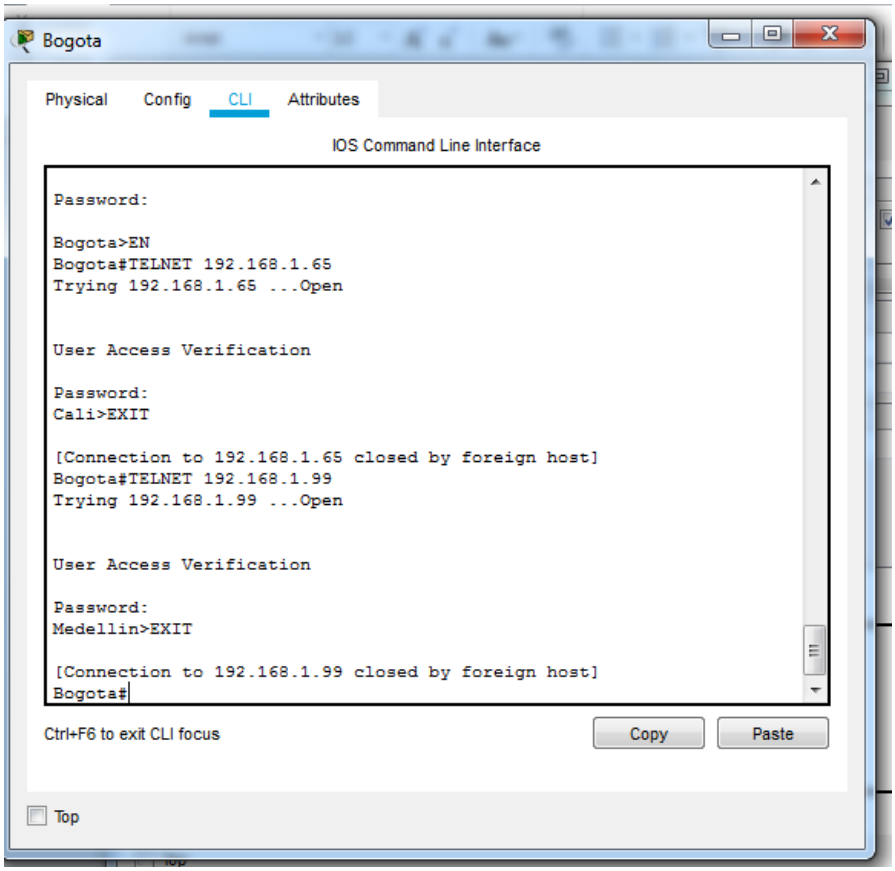
%SYS-5-CONFIG_I: Configured from console by console

a. Cada router debe estar habilitado para establecer conexiones Telnet con los demás routers y tener acceso a cualquier dispositivo en la red.

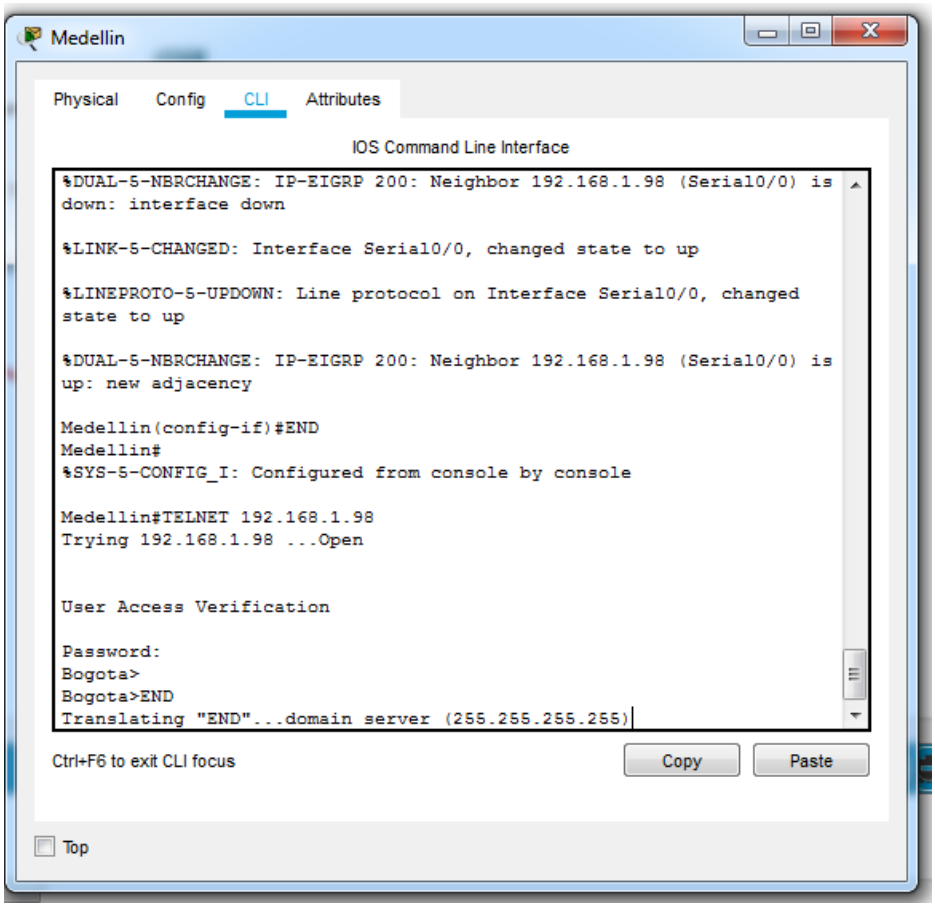
BOGOTA CALI



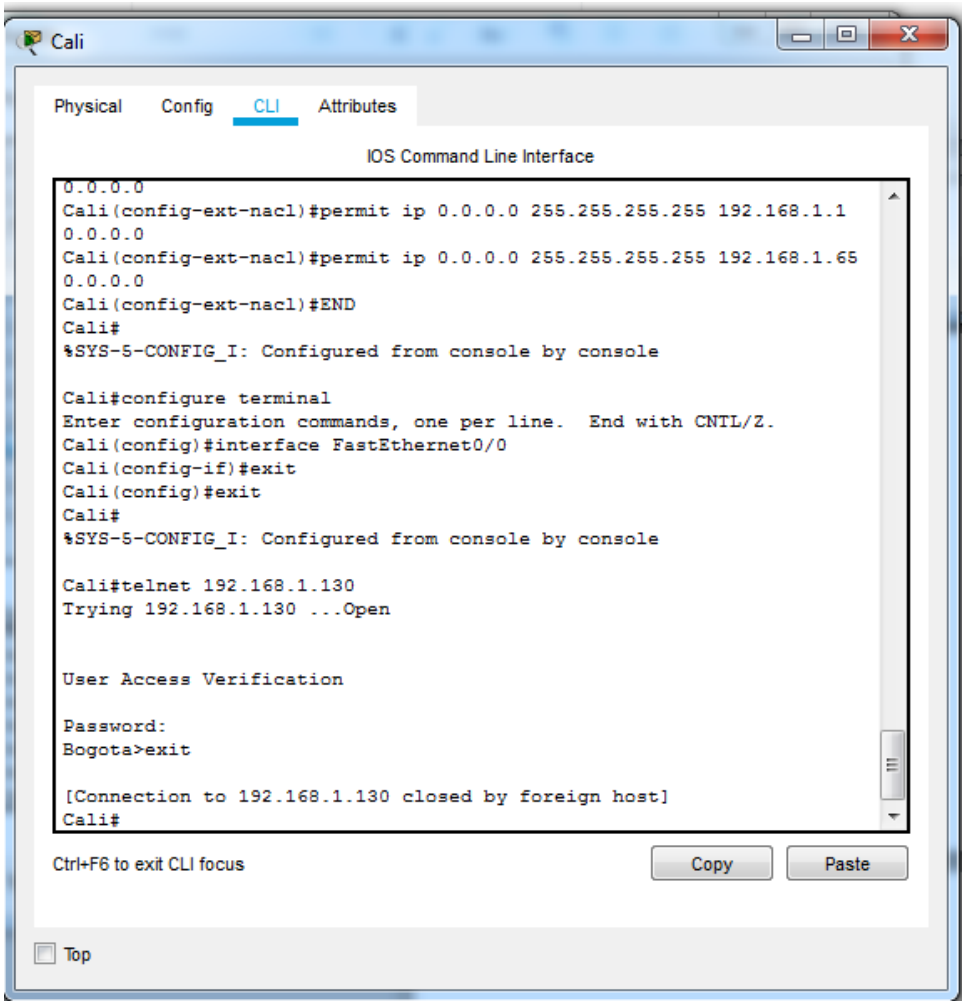
BOGOTA MEDELLIN



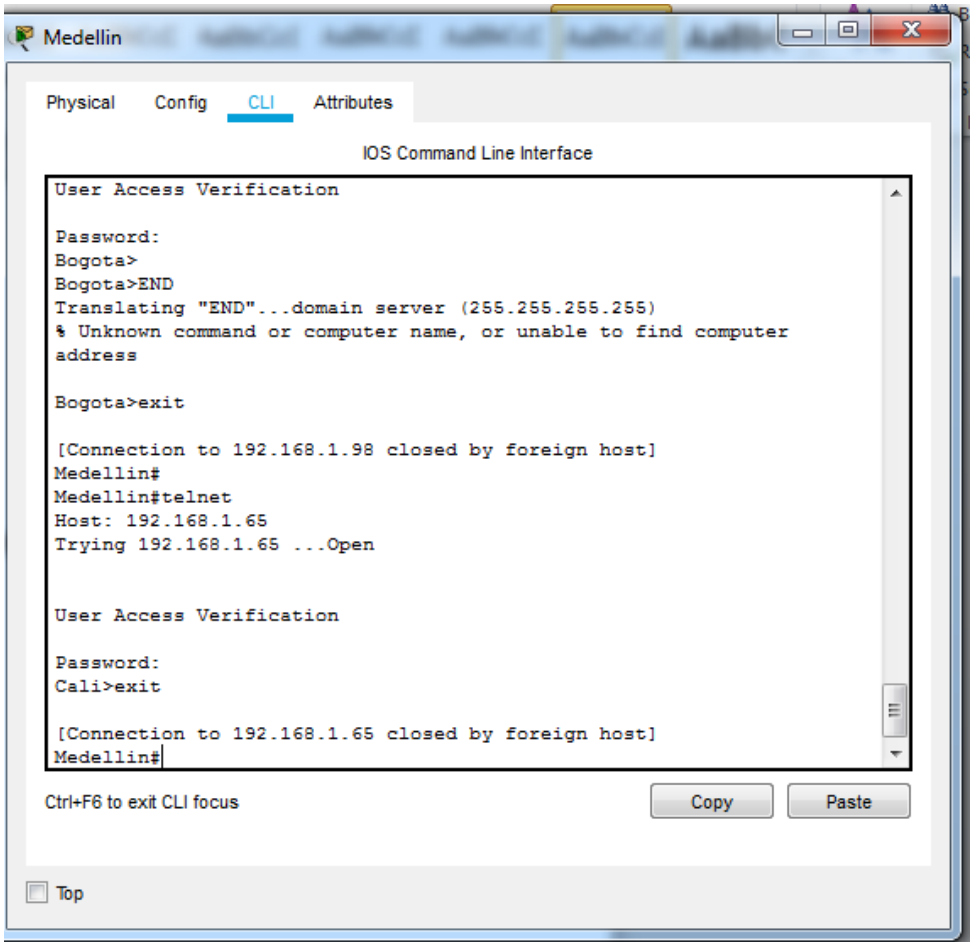
MEDELLIN BOGOTA



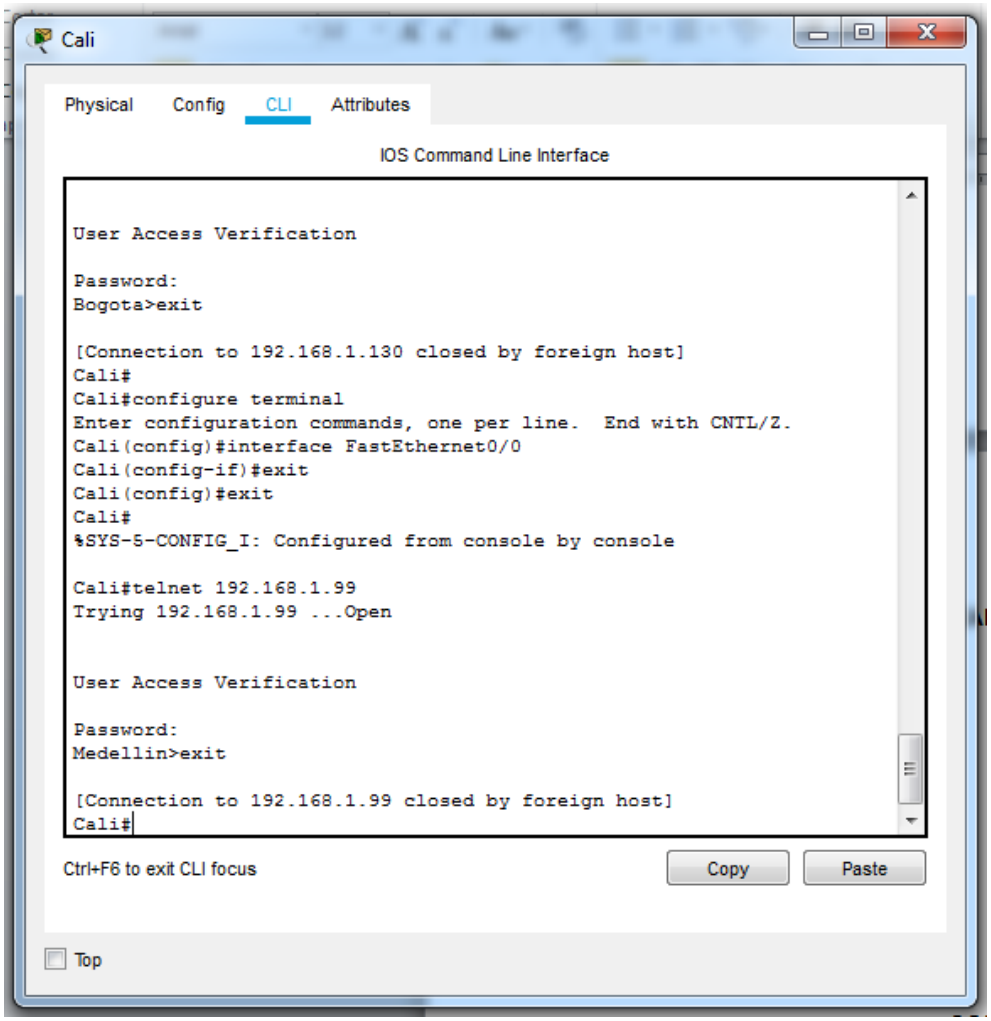
CALI BOGOTA


Cali
Physical
Config
CLI
Attributes
IOS Command Line Interface
0.0.0.0
Cali(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.1
0.0.0.0
Cali(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.65
0.0.0.0
Cali(config-ext-nacl)#END
Cali#
%SYS-5-CONFIG_I: Configured from console by console
Cali#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Cali(config)#interface FastEthernet0/0
Cali(config-if)#exit
Cali(config)#exit
Cali#
%SYS-5-CONFIG_I: Configured from console by console
Cali#telnet 192.168.1.130
Trying 192.168.1.130 ...Open
User Access Verification
Password:
Bogota>exit
[Connection to 192.168.1.130 closed by foreign host]
Cali#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

MEDELLIN CALI



CALI MEDELLIN



b. El equipo WS1 y el servidor se encuentran en la subred de administración. Solo el servidor de la subred de administración debe tener acceso a cualquier otro dispositivo en cualquier parte de la red.

BOGOTA

Bogota#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Bogota(config)#ip access-list extended ServerPT
Bogota(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.99 0.0.0.0
Bogota(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.1 0.0.0.0
Bogota(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.131 0.0.0.0
Bogota(config-ext-nacl)#end
Bogota#

%SYS-5-CONFIG_I: Configured from console by console

MEDELLIN

Medellin#
Medellin#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Medellin(config)#interface Serial0/0
Medellin(config-if)#EXIT
Medellin(config)#ip access-list extended ServerPT
Medellin(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.33 0.0.0.0
Medellin(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.98 0.0.0.0
Medellin(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.131 0.0.0.0
Medellin(config-ext-nacl)#END
Medellin#
%SYS-5-CONFIG_I: Configured from console by console

CALI

Cali#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
Cali(config)#ip access-list extended ServerPT
Cali(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.99 0.0.0.0
Cali(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.1 0.0.0.0
Cali(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.65 0.0.0.0
Cali(config-ext-nacl)#END
Cali#

%SYS-5-CONFIG_I: Configured from console by console

c. Las estaciones de trabajo en las LAN de MEDELLIN y CALI no deben tener acceso a ningún dispositivo fuera de su subred, excepto para interconectar con el servidor.

MEDELLIN

Medellin>EN
Medellin#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
Medellin(config)#ip access-list extended ServerPT
Medellin(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.3 0.0.0.0
Medellin(config-ext-nacl)#EXIT
Medellin(config)#INT F0/0
Medellin(config-if)#ip access-group ServerPT in
Medellin(config-if)#END
Medellin#

%SYS-5-CONFIG_I: Configured from console by console

CALI

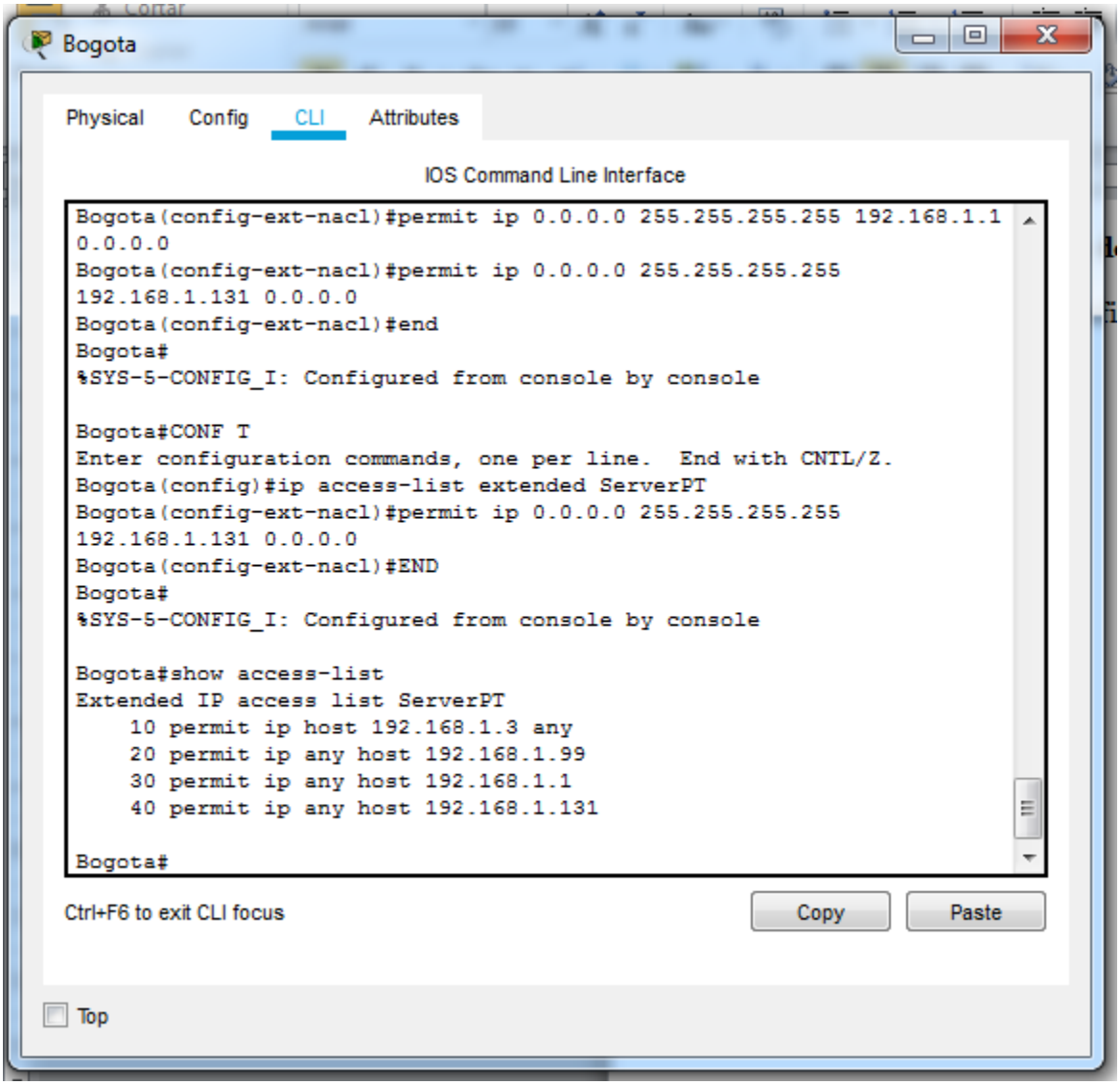
Cali#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Cali(config)#ip access-list extended ServerPT
Cali(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.3 0.0.0.0
Cali(config-ext-nacl)#
Cali(config-ext-nacl)#end
Cali#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Cali(config)#interface FastEthernet0/0
Cali(config-if)#
%SYS-5-CONFIG_I: Configured from console by console
Cali(config-if)#exit
Cali(config)#interface FastEthernet0/0
Cali(config-if)#ip access-group ServerPT in
Cali(config-if)#end
Cali#

%SYS-5-CONFIG_I: Configured from console by console.

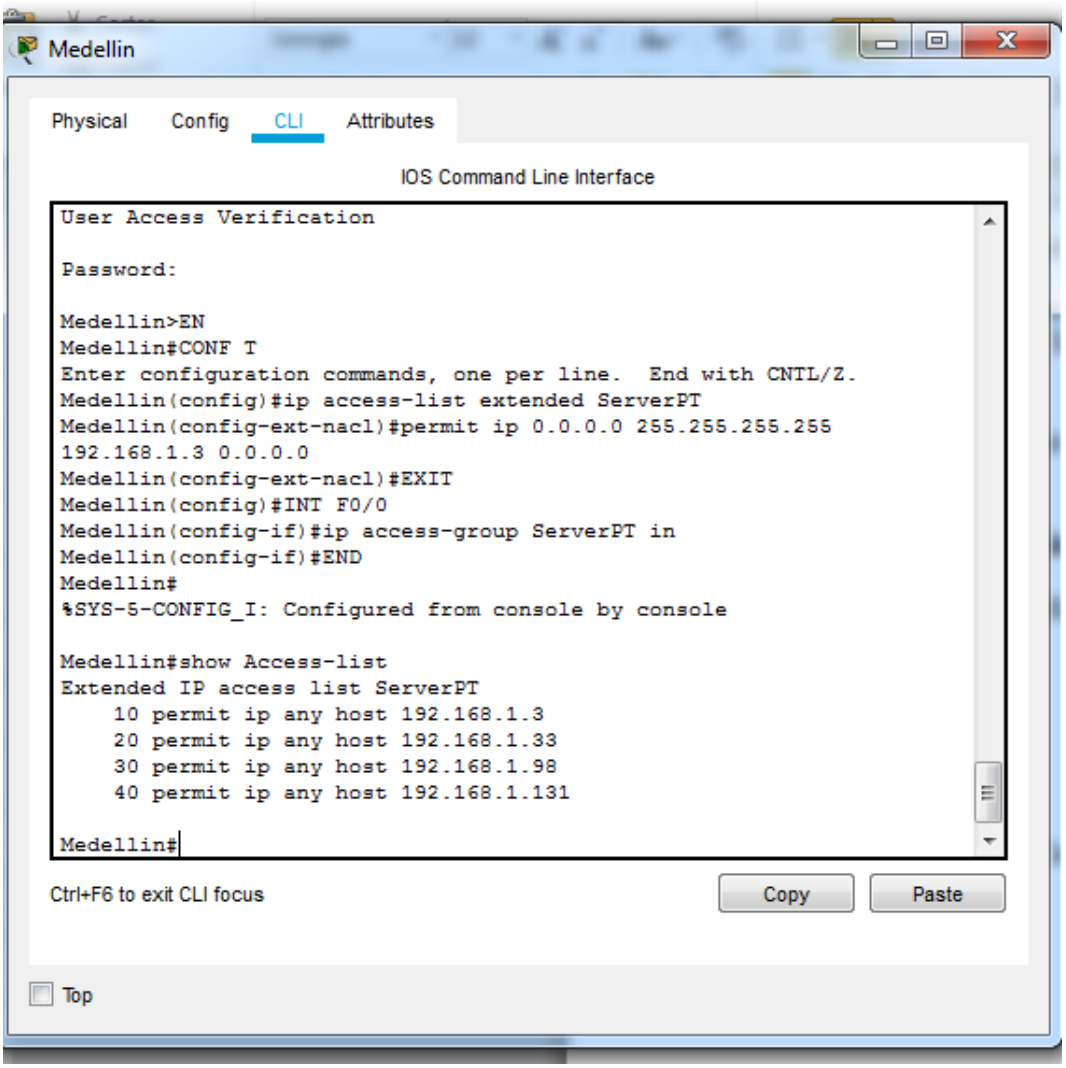
11. Parte 5: Comprobación de la red instalada.

a. Se debe probar que la configuración de las listas de acceso fue exitosa.

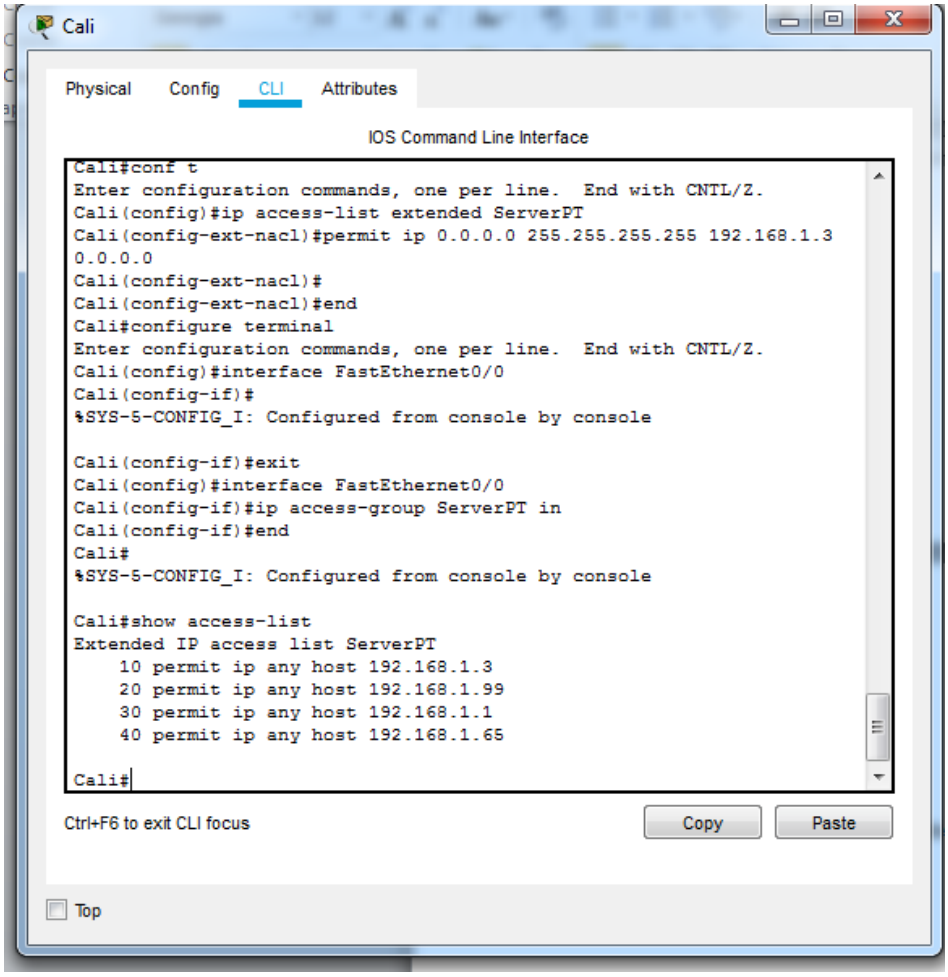
BOGOTA



MEDELLIN


Medellin
Physical
Config
CLI
Attributes
IOS Command Line Interface
User Access Verification
Password:
Medellin>EN
Medellin#CONF T
Enter configuration commands, one per line. End with CNTL/Z.
Medellin(config)#ip access-list extended ServerPT
Medellin(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255
192.168.1.3 0.0.0.0
Medellin(config-ext-nacl)#EXIT
Medellin(config)#INT F0/0
Medellin(config-if)#ip access-group ServerPT in
Medellin(config-if)#END
Medellin#
%SYS-5-CONFIG_I: Configured from console by console
Medellin#show Access-list
Extended IP access list ServerPT
10 permit ip any host 192.168.1.3
20 permit ip any host 192.168.1.33
30 permit ip any host 192.168.1.98
40 permit ip any host 192.168.1.131
Medellin#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

CALI

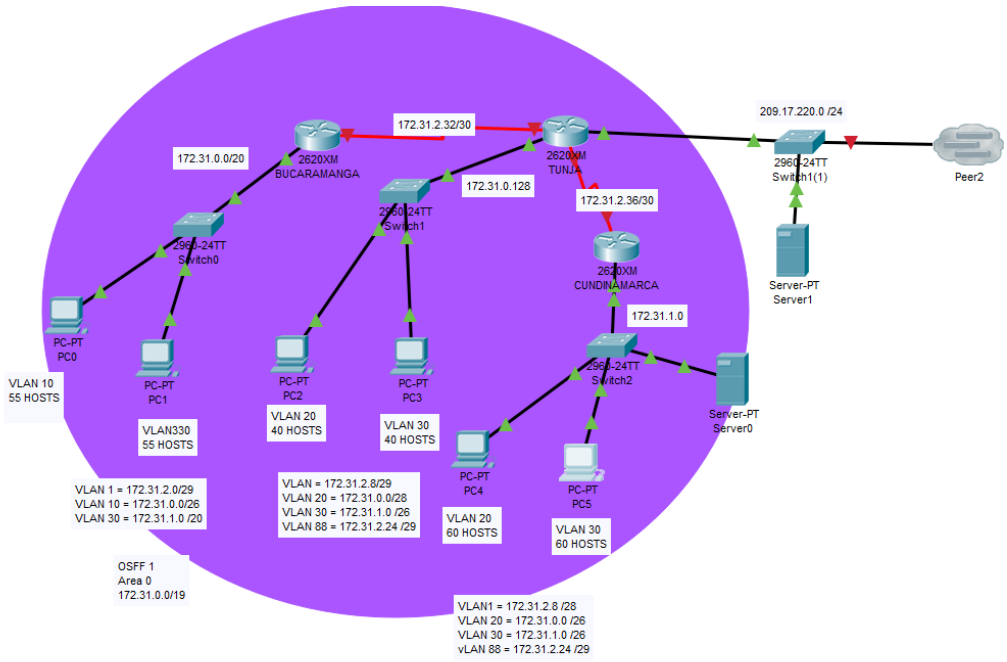

Cali
Physical
Config
CLI
Attributes
IOS Command Line Interface
Cali#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Cali(config)#ip access-list extended ServerPT
Cali(config-ext-nacl)#permit ip 0.0.0.0 255.255.255.255 192.168.1.3
0.0.0.0
Cali(config-ext-nacl)#
Cali(config-ext-nacl)#end
Cali#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Cali(config)#interface FastEthernet0/0
Cali(config-if)#
%SYS-5-CONFIG_I: Configured from console by console
Cali(config-if)#exit
Cali(config)#interface FastEthernet0/0
Cali(config-if)#ip access-group ServerPT in
Cali(config-if)#end
Cali#
%SYS-5-CONFIG_I: Configured from console by console
Cali#show access-list
Extended IP access list ServerPT
10 permit ip any host 192.168.1.3
20 permit ip any host 192.168.1.99
30 permit ip any host 192.168.1.1
40 permit ip any host 192.168.1.65
Cali#
Ctrl+F6 to exit CLI focus
Copy
Paste
Top

b. Comprobar y Completar la siguiente tabla de condiciones de prueba para confirmar el óptimo funcionamiento de la red e.

	ORIGEN	DESTINO	RESULTADO
TELNET	Router MEDELLIN	Router CALI	ok
	WS_1	Router BOGOTA	ok
	Servidor	Router CALI	ok
	Servidor	Router MEDELLIN	ok
TELNET	LAN del Router MEDELLIN	Router CALI	falla
	LAN del Router CALI	Router CALI	ok
	LAN del Router MEDELLIN	Router MEDELLIN	ok
	LAN del Router CALI	Router MEDELLIN	falla
PING	LAN del Router CALI	WS_1	falla
	LAN del Router MEDELLIN	WS_1	falla
	LAN del Router MEDELLIN	LAN del Router CALI	falla
	LAN del Router CALI	Servidor	ok
PING	LAN del Router MEDELLIN	Servidor	ok
	Servidor	LAN del Router MEDELLIN	ok
	Servidor	LAN del Router CALI	ok
	Router CALI	LAN del Router MEDELLIN	ok
	Router MEDELLIN	LAN del Router CALI	ok

12.ESENARIO 2

Una empresa tiene la conexión a internet en una red Ethernet, lo cual deben adaptarlo para facilitar que sus routers y las redes que incluyen puedan, por esa vía, conectarse a internet, pero empleando las direcciones de la red LAN original.



13.TOPOLOGIA

3 routers 2620mx
4 switchs 2960-24tt
2 servidor
6 computadores
1 nube

14. **Todos los routers deberán tener los siguiente**:

- Configuración básica.

BUACRAMANGA
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname BUCARAMANGA
BUCARAMANGA(config)#
BUCARAMANGA>en
BUCARAMANGA#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BUCARAMANGA(config)#no ip domain-lookup
BUCARAMANGA(config)#enable secret class
BUCARAMANGA(config)#username CISCO password CL^Z
BUCARAMANGA#
%SYS-5-CONFIG_I: Configured from console by console
BUCARAMANGA#
BUCARAMANGA#conf t
Enter configuration commands, one per line. End with CNTL/Z.
BUCARAMANGA(config)#username BUCARAMANGA password CLASS

TUNJA
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname TUNJA
TUNJA(config)#
Enter configuration commands, one per line. End with CNTL/Z.
TUNJA(config)#no ip domain-lookup
TUNJA(config)#enable secret class
TUNJA(config)#username TUNJA password CISCO

CUNDINAMARCA
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#hostname CUNDINAMARCA
CUNDINAMARCA(config)#
CUNDINAMARCA(config)#no ip domain-lookup
CUNDINAMARCA(config)#enable secret class
CUNDINAMARCA(config)#username CISCO password CLASS

- **Autenticación local con AAA.**

BUCARAMANGA(config-line)#username adminadmin secret passpass

BUCARAMANGA(config)#aaa new-model
BUCARAMANGA(config)#aaa authentication login AAA-LOGIN local
BUCARAMANGA(config)#line console 0
BUCARAMANGA(config-line)#login authentication AAA-LOGIN
BUCARAMANGA(config-line)#line vty 0 4
BUCARAMANGA(config-line)#login authentication AAA-LOGINLOCAL local

TUNJA(config-line)#username adminadmin secret passpass
TUNJA(config)#aaa new-model
TUNJA(config)#aaa authentication login AAA-LOGIN local
TUNJA(config)#line console 0
TUNJA(config-line)#login authentication AAA-LOGIN
TUNJA(config-line)#line vty 0 4
TUNJA(config-line)#login authentication AAA-LOGIN

CUNDINAMARCA(config-line)#username adminadmin secret
passpassCUNDINAMARCA(config)#aaa new-model
CUNDINAMARCA(config)#aaa authentication login AAA-LOGIN local
CUNDINAMARCA(config)#line console 0
CUNDINAMARCA(config-line)#login authentication AAA-LOGIN
CUNDINAMARCA(config-line)#line vty 0 4
CUNDINAMARCA(config-line)#login authentication AAA-LOGIN

- **Cifrado de contraseñas**.

BUCARAMANGA(config)#line console 0
BUCARAMANGA(config-line)#password 12345
BUCARAMANGA(config-line)#login authentication LOCAL
BUCARAMANGA(config-line)#line vty 0 15
BUCARAMANGA(config-line)#login authentication LOCAL
BUCARAMANGA(config-line)#password 12345
BUCARAMANGA(config-line)#exit
BUCARAMANGA(config-line)#login block-for 10 attempts 5 within 60

TUNJA(config)#line console 0
TUNJA(config-line)#password 12345
TUNJA(config-line)#login authentication LOCAL
TUNJA(config-line)#line vty 0 15
TUNJA(config-line)#login authentication LOCAL
TUNJA(config-line)#password 12345
TUNJA(config-line)#EXIT
TUNJA(config-line)#login block-for 10 attempts 5 within 60

CUNDINAMARCA(config)#line console 0

CUNDINAMARCA(config-line)#password cisco
CUNDINAMARCA(config-line)#login authentication LOCAL
CUNDINAMARCA(config-line)#exec-timeout 5 0
CUNDINAMARCA(config-line)#line vty 0 15
CUNDINAMARCA(config-line)#login authentication LOCAL
CUNDINAMARCA(config-line)#password cisco
CUNDINAMARCA(config-line)#exec-timeout 5 0
CUNDINAMARCA(config-line)#exit
CUNDINAMARCA(config-line)#login block-for 10 attempts 5 within 60

- **Un máximo de internos para acceder al router.**

BUCARAMANGA(config-line)#login block-for 10 attempts 5 within 60
TUNJA(config-line)#login block-for 10 attempts 5 within 60
CUNDINAMARCA(config-line)#login block-for 10 attempts 5 within 60

• Máximo tiempo de acceso al detectar ataques.
BUCARAMANGA(config)#login block-for 300 attempt 3 within 60

TUNJA(config-line)#login block-for 10 attempts 5 within 60

CUNDINAMARCA(config-line)#login block-for 10 attempts 5 within 60

•Establezca un servidor TFTP y almacene todos los archivos necesarios de los routers.
BUCARAMANGA#show flash

System flash directory:
File Length   Name/status
3   5571584 c2600-i-mz.122-28.bin
2   28282   sigdef-category.xml
1   227537   sigdef-default.xml
[5827403 bytes used, 58188981 available, 64016384 total]
63488K bytes of processor board System flash (Read/Write)

BUCARAMANGA#copy flash tftp
Source filename []? copiabucaramanga.bin
Address or name of remote host []? 20917.220.4
Destination filename [copiabucaramanga.bin]? copia BUCARAMANGA
Writing copiabucaramanga.bin*...!!!!!!!*
[OK - 33591768 bytes]

33591768 bytes copied in 0.86 secs (4101159 bytes/sec)

TUNJA#
TUNJA#
TUNJA#copy flash tftp
Source filename []? tunja.bin
Address or name of remote host []? 209.17.220.4
Destination filename [tunja.bin]? copia Tunja

Writing copia tunja.bin...!!!!!!
[OK - 33591768 bytes]

33591768 bytes copied in 0.86 secs (4101159 bytes/sec)

CUNDINAMARCA#show flash

System flash directory:
File Length Name/status
3 5571584 c2600-i-mz.122-28.bin
2 28282 sigdef-category.xml
1 227537 sigdef-default.xml
[5827403 bytes used, 58188981 available, 64016384 total]
63488K bytes of processor board System flash (Read/Write)

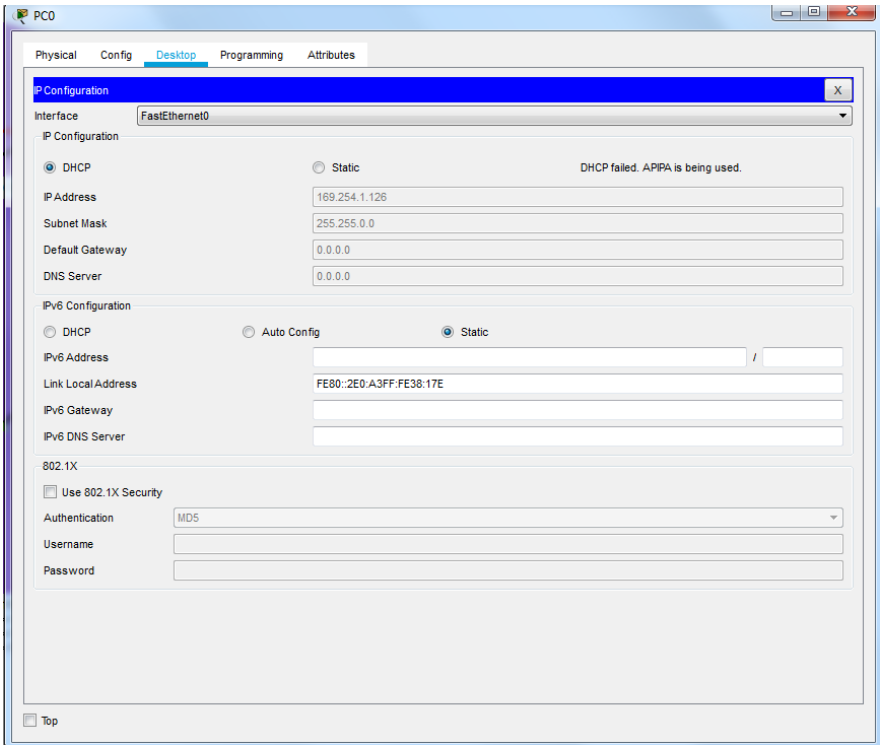
CUNDINAMARCA#copy flash tftp
Source filename []? copiacundinamarca.bin
Address or name of remote host []? 20917.220.4
Destination filename [copiacundinamarca.bin]? copia cundinamarca
Writing copiacundinamarca.bin...!!
[OK - 33591768 bytes]
33591768 bytes copied in 0.86 secs (4101159 bytes/sec)

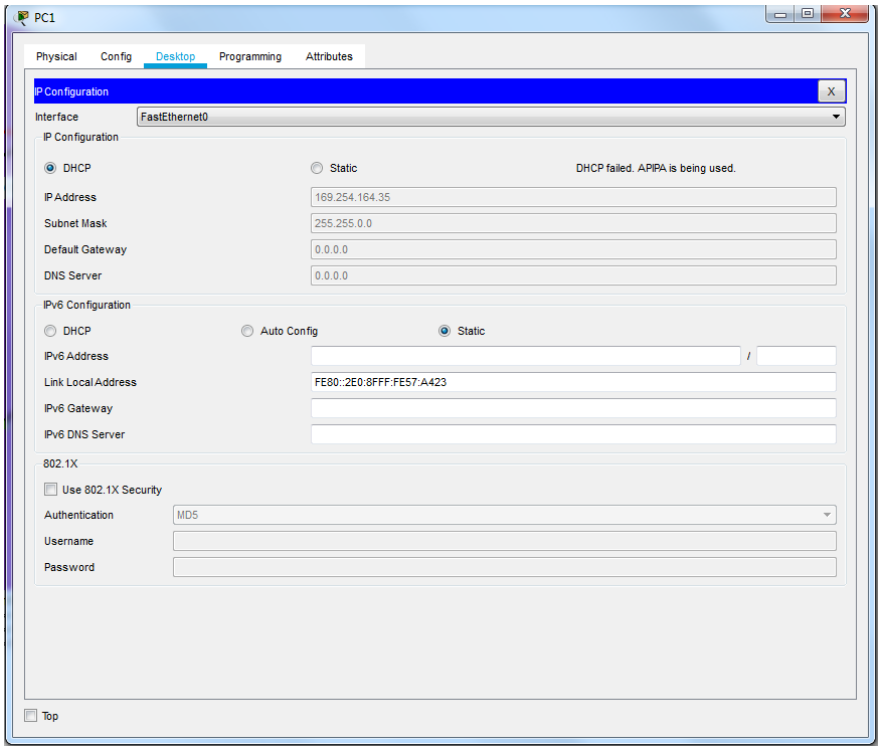
15. El DHCP deberá proporcionar solo direcciones a los hosts de Bucaramanga y Cundinamarca.

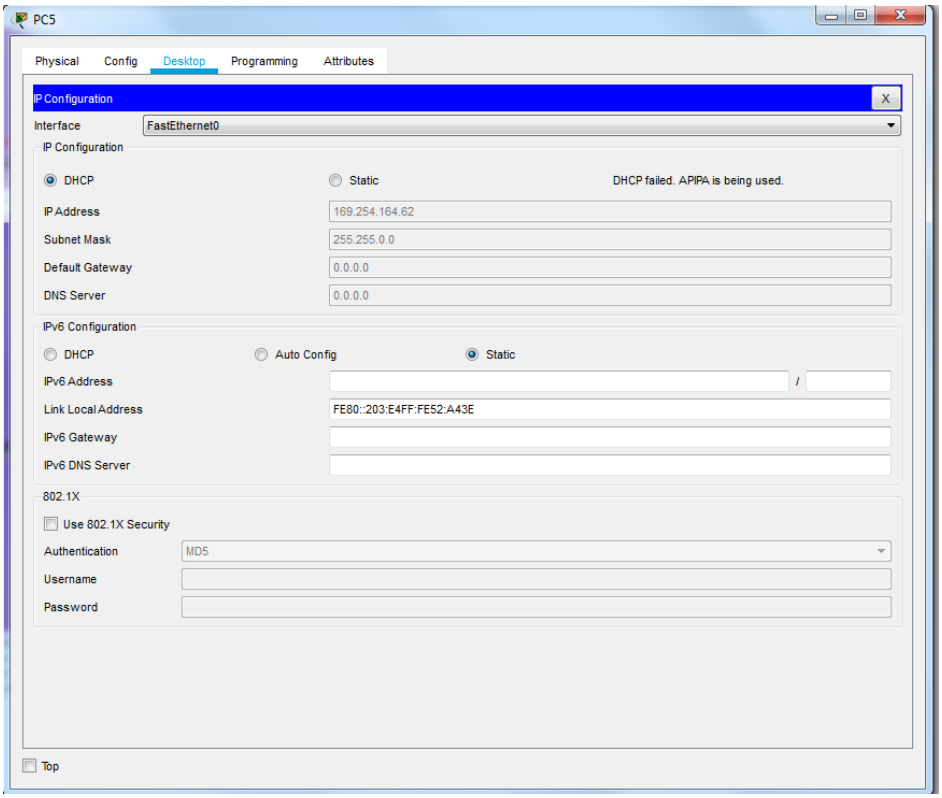
```
TUNJA(config)#ip dhcp excluded-address 172.31.0.1 172.31.0.4
TUNJA(config)#ip dhcp excluded-address 172.31.0.65 172.31.0.68
TUNJA(config)#ip dhcp excluded-address 172.31.1.65 172.31.1.68
TUNJA(config)#ip dhcp excluded-address 172.31.1.1 172.31.1.4
TUNJA(config)#ip dhcp pool vlan10B
TUNJA(dhcp-config)#network 172.31.0.0 255.255.255.192
TUNJA(dhcp-config)#default-router 172.31.0.1
TUNJA(dhcp-config)#dns-server 172.31.2.27
TUNJA(dhcp-config)#ip dhcp pool vlan30B
TUNJA(dhcp-config)#network 172.31.0.64 255.255.255.192
TUNJA(dhcp-config)#default-router 172.31.0.65
TUNJA(dhcp-config)#dns-server 172.31.2.27
TUNJA(dhcp-config)#ip dhcp pool vlan20C
TUNJA(dhcp-config)#network 172.31.1.64 255.255.255.192
TUNJA(dhcp-config)#default-router 172.31.1.65
TUNJA(dhcp-config)#dns-server 172.31.2.27
TUNJA(dhcp-config)#ip dhcp pool vlan30C
TUNJA(dhcp-config)#network 172.31.1.0 255.255.255.192
TUNJA(dhcp-config)#default-router 172.31.1.1
TUNJA(dhcp-config)#dns-server 172.31.2.27
  TUNJA(dhcp-config)#

 BUCARAMANGA(config)#int g0/0.10
  BUCARAMANGA(config-subif)#ip helper-address 172.31.2.33
  BUCARAMANGA(config-subif)#int g0/0.30
  BUCARAMANGA(config-subif)#ip helper-address 172.31.2.33
  BUCARAMANGA(config-subif)#end
  BUCARAMANGA#

 CUNDINAMARCA(config)#int g0/0.20
  CUNDINAMARCA(config-subif)#ip helper-address 172.31.2.37
  CUNDINAMARCA(config-subif)#int g0/0.30
  CUNDINAMARCA(config-subif)#ip helper-address 172.31.2.37
  CUNDINAMARCA(config-subif)#end
 CUNDINAMARCA#
```


PC0
Physical
Config
Desktop
Programming
Attributes
IP Configuration
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP failed. APIPA is being used.
IP Address
169.254.1.126
Subnet Mask
255.255.0.0
Default Gateway
0.0.0.0
DNS Server
0.0.0.0
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::2E0:A3FF:FE38:17E
IPv6 Gateway
IPv6 DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top


PC1
Physical
Config
Desktop
Programming
Attributes
IP Configuration
Interface
FastEthernet0
IP Configuration
DHCP
Static
DHCP failed. APIPA is being used.
IP Address
169.254.164.35
Subnet Mask
255.255.0.0
Default Gateway
0.0.0.0
DNS Server
0.0.0.0
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::2E0:8FFF:FE57:A423
IPv6 Gateway
IPv6 DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Password
Top



16. **El web server deberá tener NAT estático y el resto de los equipos de la topología emplearan NAT de sobrecarga (PAT).**

BUCARAMANGA(config)#ip nat pool NATBUC 172.31.2.33 172.31.2.34 netmask 255.255.255.252
BUCARAMANGA(config)#access-list 1 permit 172.31.0.0 0.0.0.63
BUCARAMANGA(config)#ip nat inside source list 1 pool NATBUC overload
BUCARAMANGA(config)#ip nat inside source list 2 pool NATBUC overload
BUCARAMANGA(config)#int fa0/0
BUCARAMANGA(config-if)#ip nat inside

TUNJA(config)#ip nat inside source static 209.17.220.4 172.31.2.33
TUNJA(config)#int fa0/0
TUNJA(config-if)#ip nat inside
TUNJA(config-if)#int s0/0/0
TUNJA(config-if)#ip nat outside
TUNJA(config)#ip nat pool NATPOOL 172.31.2.33 172.31.2.34 netmask 255.255.255.252
TUNJA(config)#access-list 1 permit 172.31.0.0 0.0.0.63
TUNJA(config)#access-list 2 permit 172.31.1.0 0.0.0.63
TUNJA(config)#ip nat inside source list 1 pool NATPOOL overload

TUNJA(config)#ip nat inside source list 2 pool NATPOOL overload
TUNJA(config)#int fa0/1
TUNJA(config-if)#ip nat inside
TUNJA(config-if)#int s0/0/0
TUNJA(config-if)#ip nat outside
TUNJA(config-if)#

CUNDINAMARCA(config)#ip nat pool NATCUND 172.31.2.37 172.31.2.38 netmask 255.255.255.252
CUNDINAMARCA(config)#access-list 1 permit 172.31.1.0 0.0.0.63
CUNDINAMARCA(config)#ip nat inside source list 1 pool NATCUND overload
CUNDINAMARCA(config)#access-list 2 permit 172.31.0.0 0.0.0.63
CUNDINAMARCA(config)#ip nat inside source list 2 pool NATCUND overload
CUNDINAMARCA(config)#int fa0/0
CUNDINAMARCA(config-if)#ip nat inside
CUNDINAMARCA(config-if)#int s0/0/0
CUNDINAMARCA(config-if)#ip nat outside
CUNDINAMARCA(config-if)#

17. El enrutamiento deberá tener autenticación.

BUCARAMANGA(config)#access-list 100 permit ip host 172.31.1.5 200.17.220.2 0.0.0.255
BUCARAMANGA(config)#access-list 100 permit ip host 172.31.1.5 172.31.0.0 0.0.0.63
BUCARAMANGA(config)#int fa0/0
BUCARAMANGA(config-if)#ip access-group 100 out
BUCARAMANGA(config-if)#no shutdown
BUCARAMANGA(config-if)#
BUCARAMANGA(config)#access-list 101 deny ip host 172.31.0.5 200.17.220.2 0.0.0.255
BUCARAMANGA(config)#access-list 101 permit ip host 172.31.0.5 172.31.0.20 0.0.0.63
BUCARAMANGA(config)#access-list 101 permit ip host 172.31.0.5 172.31.0.2 0.0.0.63
BUCARAMANGA(config)#int fa0/0
BUCARAMANGA(config-if)#ip access-group 101 out
BUCARAMANGA(config-if)#no shutdown

110 hosts = 2^7 = 128-2 = 126
172.31.0.129/25 – 172.31.0.254/25
TUNJA(config)#access-list 100 permit ip host 172.31.1.15 200.17.220.4 0.0.0.255

TUNJA(config)#access-list 100 permit tcp host 172.31.1.15 200.17.220.2 0.0.0.255
TUNJA(config)#int fa0/1
TUNJA(config-if)#ip access-group 100 out
TUNJA(config-if)#no shutdown
TUNJA(config-if)#
TUNJA(config)#access-list 101 permit ip host 172.31.0.20 172.31.0.2 0.0.0.63
TUNJA(config)#access-list 101 permit ip host 172.31.0.20 172.31.0.5 0.0.0.63
TUNJA(config)#int fa0/1
TUNJA(config-if)#ip access-group 101 out
TUNJA(config-if)#no shutdown
80 hosts = 2^7 = 128-2 = 126
172.31.1.1/25 – 172.31.1.26/25

CUNDINAMARCA(config)#access-list 100 deny ip host 172.31.0.1 200.17.220.2 0.0.0.255
CUNDINAMARCA(config)#access-list 100 permit ip host 172.31.0.1 172.31.0.20 0.0.0.63
CUNDINAMARCA(config)#access-list 100 permit ip host 172.31.0.1 172.31.1.15 0.0.0.63
CUNDINAMARCA(config)#int fa0/0
CUNDINAMARCA(config-if)#ip access-group 100 out
CUNDINAMARCA(config-if)#no shutdown
CUNDINAMARCA(config-if)#
CUNDINAMARCA(config)#access-list 102 permit ip host 172.31.0.2 200.17.220.2 0.0.0.255
CUNDINAMARCA(config)#access-list 102 deny ip host 172.31.0.2 172.31.0.20 0.0.0.63
CUNDINAMARCA(config)#access-list 102 deny ip host 172.31.0.2 172.31.1.15 0.0.0.63
CUNDINAMARCA(config)#int fa0/0
CUNDINAMARCA(config-if)#ip access-group 102 out
CUNDINAMARCA(config-if)#no shutdown
120 hosts = 2^7 = 128 -2 =126
172.31.0.1/25 – 172.31.0.126/25

18. Listas de control de acceso:

Los hosts de VLAN 20 en Cundinamarca no acceden a internet, solo a la red interna de Tunja.

ROUTER CUNDINAMARCA:

CUNDINAMARCA(config-if)#access-list 151 deny ip 172.31.1.64 0.0.0.63 209.165.220.0 0.0.0.255

CUNDINAMARCA(config)#access-list 151 permit ip any any

CUNDINAMARCA(config)#int g0/0.20

CUNDINAMARCA(config-subif)#ip access-group 151 in

CUNDINAMARCA(config-subif)#

- Los hosts de VLAN 10 en Cundinamarca si acceden a internet y no a la red interna de Tunja.

ROUTER CUNDINAMARCA:

CUNDINAMARCA(config-subif)#access-list 152 permit ip 172.31.1.0 0.0.0.63 209.165.220.0 0.0.0.255

CUNDINAMARCA(config)#access-list 152 deny ip any any

CUNDINAMARCA(config)#int g0/0.30

CUNDINAMARCA(config-subif)#ip access-group 152 in

CUNDINAMARCA(config-subif)#

•Los hosts de VLAN 30 en Tunja solo acceden a servidores web y ftp de internet.

ROUTER TUNJA:

TUNJA(config-if)#access-list 151 permit tcp 172.31.0.192 0.0.0.63 209.165.220.0 0.0.0.255 eq 80

TUNJA(config)#access-list 151 permit tcp 172.31.0.192 0.0.0.63 209.165.220.0 0.0.0.255 eq 21

TUNJA(config)#int g0/0.30

TUNJA(config-subif)#ip access-group 151 in

TUNJA(config-subif)#

- Los hosts de VLAN 20 en Tunja solo acceden a la VLAN 20 de Cundinamarca y VLAN 10 de Bucaramanga.

ROUTER TUNJA:

TUNJA(config-subif)#access-list 152 permit ip 172.31.0.128 0.0.0.63 172.31.1.64 0.0.0.63

TUNJA(config)#access-list 152 permit ip 172.31.0.128 0.0.0.63 172.31.0.0 0.0.0.63

TUNJA(config)#int g0/0.20

TUNJA(config-subif)#ip access-group 152 in
TUNJA(config-subif)#

•Los hosts de VLAN 30 de Bucaramanga acceden a internet y a cualquier equipo de VLAN 10.

ROUTER BUCARAMANGA:
BUCARAMANGA(config)#access-list 151 permit ip 172.31.0.64 0.0.0.63 209.165.220.0 0.0.0.255
BUCARAMANGA(config)#int g0/0.30
BUCARAMANGA(config-subif)#ip access-group 151 in
BUCARAMANGA(config-subif)#

- Los hosts de VLAN 10 en Bucaramanga acceden a la red de Cundinamarca (VLAN 20) y Tunja (VLAN 20), no internet.

ROUTER BUCARAMANGA:
BUCARAMANGA(config-subif)#access-list 152 permit ip 172.31.0.0 0.0.0.63 172.31.1.64 0.0.0.63
BUCARAMANGA(config)#access-list 152 permit ip 172.31.0.0 0.0.0.63 172.31.0.128 0.0.0.63
BUCARAMANGA(config)#int g0/0.10
BUCARAMANGA(config-subif)#ip access-group 152 in
BUCARAMANGA(config-subif)#

- **Los hosts de una VLAN no pueden acceder a los de otra VLAN en una ciudad.**

ROUTER BUCARAMANGA:
BUCARAMANGA(config-subif)#access-list 153 deny ip 172.31.2.0 0.0.0.7 172.31.0.0 0.0.0.63
BUCARAMANGA(config)#access-list 153 deny ip 172.31.0.64 0.0.0.63 172.31.0.0 0.0.0.63
BUCARAMANGA(config)#access-list 153 permit ip any any
BUCARAMANGA(config)#int g0/0.10
BUCARAMANGA(config-subif)#ip access-group 153 out
BUCARAMANGA(config-subif)#

ROUTER TUNJA:
TUNJA(config)#access-list 153 deny ip 172.3.2.8 0.0.0.7 172.31.0.128 0.0.0.63
TUNJA(config)#access-list 153 deny ip 172.3.0.192 0.0.0.63 172.31.0.128 0.0.0.63
TUNJA(config)#access-list 153 permit ip any any

TUNJA(config)#int g0/0.20
TUNJA(config-subif)#ip access-group 153 out
TUNJA(config-subif)#

ROUTER CUNDINAMARCA:
CUNDINAMARCA(config)#access-list 153 deny ip 172.31.2.8 0.0.0.7 172.31.1.64 0.0.0.63
CUNDINAMARCA(config)#access-list 153 deny ip 172.31.1.0 0.0.0.63 172.31.1.64 0.0.0.63
CUNDINAMARCA(config)#access-list 153 deny ip 172.31.2.24 0.0.0.7 172.31.1.64 0.0.0.63
CUNDINAMARCA(config)#access-list 153 permit ip any any
CUNDINAMARCA(config)#int g0/0.20
CUNDINAMARCA(config-subif)#ip access-group 153 out
CUNDINAMARCA(config-subif)#

- **Solo los hosts de las VLAN administrativas y de la VLAN de servidores tienen accedo a los routers e internet.**

ROUTER BUCARAMANGA:
BUCARAMANGA(config-subif)#access-list 9 permit 172.31.2.0 0.0.0.7
BUCARAMANGA(config)#access-list 9 permit 172.3.2.8 0.0.0.7
BUCARAMANGA(config)#access-list 9 permit 172.31.2.8 0.0.0.7
BUCARAMANGA(config)#line vty 0 4
BUCARAMANGA(config-line)#access-class 9 in
BUCARAMANGA(config-line)#

ROUTER TUNJA:
TUNJA(config-subif)#access-list 9 permit 172.31.2.0 0.0.0.7
TUNJA(config)#access-list 9 permit 172.3.2.8 0.0.0.7
TUNJA(config)#access-list 9 permit 172.31.2.8 0.0.0.7
TUNJA(config)#line vty 0 4
TUNJA(config-line)#access-class 9 in
TUNJA(config-line)#

ROUTER CUNDINAMARCA:
CUNDINAMARCA(config-subif)#access-list 9 permit 172.31.2.0 0.0.0.7
CUNDINAMARCA(config)#access-list 9 permit 172.3.2.8 0.0.0.7
CUNDINAMARCA(config)#access-list 9 permit 172.31.2.8 0.0.0.7
CUNDINAMARCA(config)#line vty 0 4

CUNDINAMARCA(config-line)#access-class 9 in
CUNDINAMARCA(config-line)#

19. CONCLUSIONES

El desarrollo de esta actividad con las instrucciones dadas para la práctica de la estructuración de de la redes, para tener verificación de las conexiones mediante la topología solicitada en el desarrollo de la actividad. Con l intención de autenticar los servicios con los protocolos para la seguridad de las redes y evitar perdida de información y accesos remotos autorizados y no autorizados.

todas las configuraciones tiene que tienen los protocolos basic os como el nombre y la interface que se implementan para distinguir los dispositivos y poner pon segmentos cada router y sus server, y mostrar las direcc iones IP por medio de una tabla y nos muestra ambien las direcciones MAC, para mejorar las conexiones remotas y locales.

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